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bulletin

NEWS AND VIEWS IN THE BIOLOGICAL SCIENCES

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Life Is the Greatest Problem 4
EDMUND W. SINNOTT

The Biological Program of the Atomic Energy Commission .. 17
PAUL B. PEARSON

Biologists and Conservation of Natural Resources 19
PAUL B. SEARS

Contributions from the Captive Audience 21
RUSSELL B. STEVENS

Annual Meeting of the AIBS—1952-53 25
T. C. BYERLY

Across the Editor's Desk 5

From the Societies 10

The A.I.B. Scope 11

The Biology Library 12

Know Your Societies 29

Advanced Registration and Housing Application 28

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EDITORIAL

Life Is the Greatest Problem

EDMUND W. SINNOTT

Dean of the Graduate School, Yale University

THE physical sciences hold an important place today in the minds of everyone. Physics itself, both from the remarkable developments to which it has led in the field of atomic energy and from the revolution undergone by many of its concepts during the past half century, is especially conspicuous. Its notable advances and the promise and peril it holds for the years to come deserve for it the earnest consideration of us all.

And yet the most serious questions man must answer now are not concerned with matter and energy but with one or another aspect of *life*. The problems of protoplasm are the deepest of all and to find answers for them one must go not to the physical sciences but to biology.

Food, for example, is such a problem. Millions of people today have not enough to eat. All that feeds them has to come from the bodies of plants or animals and its ultimate origin is in the process by which green plants combine carbon dioxide and water to form carbohydrates. Agriculture is man's exploitation of this synthesis and others that depend on it, and our success in keeping the world properly fed will depend on our increasing knowledge of these biological processes.

The problems of sex are also important, not only in physiology but in psychology, sociology and ethics, and are everywhere receiving much attention today. The successful maintenance of our species will depend at last on an understanding of the biology of reproduction in all its aspects.

Closely related to this is the problem of population. If the earth is not to become so overcrowded with human beings that life will grow ever more difficult and many of its satisfactions disappear, means must be found to regulate population density and distribution intelligently and with due regard to ethical, social and economic considerations. This again is at bottom a biological question.

Among the chief causes of discord today are those inherited differences between what are called the various "races" of men. These are most evident in such traits as skin color but involve many other differences, psychological as well as physical. Problems of many kinds are here involved, but since the fundamental human differences are inherited ones, they will never be completely understood nor utilized for man's welfare rather than for his disunity until their basis in inheritance is better understood. This is a problem for genetics.

How these diverse inborn capacities actually express themselves in what a man becomes—how he is modified by his surroundings and by education—is at bottom the province of human ecology. This, like other manifestations of the effect of environment on living things, is also a biological problem.

Beyond all this, the deeper questions that man faces in philosophy and religion are ultimately concerned with his place and significance in the universe. This, in turn, goes back to the question of what life really is and what relation it has to the lifeless world of matter and energy. This question, in its final analysis, is a biological one and is the deepest that the sciences of life can ask or try to answer.

These issues are all much more complex than those which physical science faces and we are far from reaching a satisfactory solution to most of them. Our respect for the complexities of protoplasm has increased since the century's turn and we recognize how much more difficult an understanding of it is than of the simpler entities in which lifeless matter occurs. Physics has undergone one profound revolution and still is only on the threshold of its career. Biology, just beginning to make fruitful use of the tools with which physics and chemistry have provided it, still awaits the new concepts which doubtless will be needed to answer its own more difficult questions. Instead of solving the problems of biology only through a more intensive chemical and physical analysis of protoplasm, many thoughtful students are inclined to believe that an increased knowledge of matter in the living state, and of the phenomena of synthesis and organization which this involves, may be expected to give us an understanding of matter and energy deeper than a study of them in their lifeless manifestation alone will ever be able to confer.

The student of biology is exploring a territory where more exciting events seem certain to occur and more important discoveries to be made than anywhere else on the broad frontier along which science is facing the unknown. He must be concerned not with the narrower aspects of biology but with many questions man has never ceased to ask since he became a rational being. The biologist must, of course, pursue his task with the utmost exactitude and critical-mindedness, but to maintain that he should do this without giving thought to the wider implications of his profession is to undervalue its significance. To see it against the background of these great human problems is what gives his work its particular fascination and distinction.

Across the EDITOR'S DESK

• The first in the series of **"guest editorials"** is presented on the preceding page. It is printed as a "tear sheet" so that it may be removed and passed along to students. Additional copies may be obtained from the AIBS office for 5¢ each; $3.00 per hundred.

❖

• **The annual address sponsored by the Society of the Sigma XI** at the AIBS meeting in Madison will be given by E. J. Kraus, Department of Horticulture, Oregon State College. His subject will be: "The Significance of Growth Regulating Substances in Agricultural Practice."

❖

• **The VIII International Botanical Congress** will be held in Paris from July 2-14, 1954. The General Secretary wishes to obtain the addresses of botanists interested in receiving a program. Names and addresses should be sent to: Pierre Chouard, the General Secretary, VIII International Botanical Congress, 292, Rue Saint-Martin, Paris (3°), France.

❖

• **The VI International Congress for Microbiology** will be held in Rome from September 6-12, 1953. The program will include plenary sessions, sectional meetings, symposia, and meetings of the Special Committees of the International Association of Microbiologists. Twenty-one sections have been provisionally listed. The following symposia are planned: Bacterial Cytology; Microbial Metabolism; Nutrition and Growth Factors; Growth Inhibitors and Chemotherapy; Morphology, Biology, and Systematics of the Actinomycetales; Host-virus Interactions.

❖

• **The VII International Congress for the History of Science** will be held in Jerusalem, Israel, on August 4-11, 1953. The President is Professor F. S. Bodenheimer of Hebrew University. Apart from the various sectional meetings, two discussions on basic problems will be presented. The first will follow the address of Professor G. Sarton of Harvard University on *Science versus the Humanities, The History of Science*. The second discussion will be initiated by Professor J. Needham of Cambridge with his lecture: *Chinese-Western Relations in the History of Science and Technology*.

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• J. Paul Reynolds, Assistant Dean of the College of Arts and Sciences and Head of the Department of Zoology at The Florida State University represented the AIBS at **the inauguration of Jay F. W. Pearson as President of the University of Miami,** Coral Gables, Florida, on May 7.

❖

• **Fourteen American geneticists have received grants from the National Science Foundation to attend the IX International Congress of Genetics** in Bellagio, Italy, August 24-31, 1953. Dr. Alan T. Waterman, the Director, announced April 16th. The names and institutions of scientists receiving these grants for travel are listed below: Richard B. Goldschmidt, President of the Congress (University of California, Berkeley, Calif.), David M. Bonner (Yale University), Hampton L. Carson (Washington University), Ernst Caspari (Wesleyan University), Ruth V. Dippell (Indiana University), Allen S. Fox (Ohio State University), Joseph G. Gall (University of Minnesota), Eldon J. Gardner (Utah State Agricultural College), Melvin Green (University of California, Davis, Calif.), R. P. Levine (Amherst College), Clarence P. Oliver (University of Texas), A. H. Sparrow (Brookhaven National Laboratory), Kathryn F. Stein (Mount Holyoke College) and Bruce Walker (Cold Spring Harbor Biological Laboratory).

❖

• **The Upjohn Company,** a Michigan corporation engaged in the manufacture of pharmaceuticals, is a new Associate of AIBS. Since it was founded in 1886, the objective of the Company has been to serve the medical and pharmaceutical professions. The business was inaugurated for the purpose of manufacturing better pills, the most prevalent form of medication at the time. With the decline of pills as a popular form of medication, the Company started to manufacture a general line of pharmaceuticals and specialty products. It was a pioneer in the development of medical cod liver oil and effervescent salts, and has long been a leader in the fields of vitamin and nutritional products. Research and development of antibiotics and hormones have also played a major part in the growth of the Company. All of these factors—farsighted research, modern production facilities, quality products, intelligent selling and loyal employees—have combined to make the Upjohn Company a leading manufacturer of pharmaceuticals.

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• **The Fourth Annual Summer Conference sponsored by the Biology Department of the Brookhaven National Laboratory** will be held at the Laboratory on August 3-5, 1953. The title of the symposium is: "Abnormal and Pathological Plant Growth." Those planning to attend should send in a notification by July 25. Persons who are not citizens of the United States must indicate their desire to be present at the conference by June 21. Correspondence relative to the conference should be addressed to: Dr. A. H. Sparrow, Brookhaven National Laboratory, Upton, Long Island, N. Y.

❖

• **Associated Seed Growers, Inc.,** breeders and growers of vegetable seeds since 1856, has recently become an Associate of AIBS. Nearly a century ago, Everett B. Clark started in the business of growing vegetable seeds on a farm in Milford, Connecticut. About the same time, N. B. Keeney started in the seed business at LeRoy, New York, and John H. Allan at Picton, Ontario, Canada. In 1927, these three concerns united under the present name. The Jerome B. Rice Seed Company, of Cambridge, New York, was later included. The principal work of these companies, now consolidated, has been the breeding and growing of dependable strains of vegetable seeds. "Asgrow" breeding stations are operated in eight sections of the country and are staffed by plant breeders and seedsmen of scientific and technical skill. More than 1000 acres are devoted exclusively to breeding work in addition to the thousands of acres used in seed production. As a result of its research, breeding, and production program, the Associated Seed Growers, Inc. feels amply justified in saying that "Asgrow seeds are well bred."

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• **The fourteenth annual meeting of the Association of Southeastern Biologists** was held at the University of North Carolina, Chapel Hill, on April 16-18th, 1953. Eighty

papers were presented before sectional groups representing general biology, zoology, botany, physiology, ecology and genetics. Registration at the meeting covered all the prominent universities and colleges of the Southeastern states, and representatives were in attendance from several federal agencies interested in the support of scientific research in the south. L. C. Dunn of Columbia University presented the annual evening lecture on the occasion of this meeting.

New officers of the Association of Southeastern Biologists are as follows: President: Bruce D. Reynolds, Miller School of Biology, University of Virginia. President-Elect: H. R. Totten, Department of Botany, University of North Carolina. Vice-President: Alvin Beatty, Emory University. Treasurer: J. Paul Reynolds, Department of Zoology, Florida State University, Tallahassee. Mary Esther Gaulden, Biology Division, Oak Ridge National Laboratory, continues as Secretary. New additions to the Executive Committee of the association are H. H. Hobbs, University of Virginia, Gordon Walcott, U. S. Public Health Service, Columbia, South Carolina, and John Fincher, Howard College, Birmingham, Alabama. Also meeting with the Association were two other biological societies; the Southeastern Section, Botanical Society of America, and the Southern Appalachian Botanical Club. A. J. Sharp, of the University of Tennessee, was elected Chairman of the Southeastern Section, Botanical Society of America; Frederick T. Wolf, of Vanderbilt University, was elected Secretary; and H. E. Wheeler, of Louisiana State University, was made Chairman of the Activities Committee.

Three notable prizes were awarded at the meeting. The Carolina Biological Supply Company Prize of one hundred dollars for the best research paper presented in competition for this prize and read at the meeting, went to Daniel Billen, Bernard F. Strehler, and George Stapleton, of the Oak Ridge National Laboratory, an atomic energy activity of the Carbide and Carbon Chemicals Company. The authors reported on the post-irradiation release of adenosinetriphosphate (ATP) from *E. coli* bacilli. Honorable mention for second place went to H. E. Wheeler of Louisiana State University for his paper on a dwarf-spored mutant *Glomerella*. The annual meritorious award to a Southeastern teacher for conspicuous service to research and teaching in the area and for prominent leadership in his institution, went to Orland E. White, Director of the Blandy Experimental Farm, University of Virginia. This award is made possible by the Southern Scientific Company, of Atlanta. The summer fellowship awarded annually by Phipps and Bird, scientific supply house of Richmond, Virginia, went to Herman Silva, Knoxville, Tennessee, for study at the Mountain Lake Biological Station of the University of Virginia. It was announced that the 1954 meeting of the Association will be held on the campus of the Louisiana State University, Baton Rouge.

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• **A combined index is now available** for the *Proceedings of the American Society for Horticultural Science*, volumes 1 to 58 inclusive, for the years 1903 to 1951. The index appears as a cloth-bound volume, comprising 311 pages. It contains over 23,000 entries covering research in floriculture, ornamental horticulture, vegetable crops, fruit crops, handling, storage, processing, breeding, fertilizers, pruning, nutrition, water relations, and the many other phases that make up the broad field of horticulture. It has been prepared especially for horticulturists by H. B. Tukey, Head of the Department of Horticulture and M. S. Barrett, Michigan State College. Both author and subject matter have been combined in the one index. Further, each entry is clearly identified with the name of the author. Entries under each author's name are arranged chronologically and have the complete titles of the paper. Certain special horticultural words as "set", "hardening", "drop", and "topping" have been used as key words. Related topics in a general field have been placed in large categories as, "apple", "tomato", "rose", "temperature", "storage", and "fertilizers". The result is that the index becomes a bibliography and may find its greatest usefulness in this feature. At the same time these larger groupings have been broken down into smaller units by cross indexing, to provide for easy handling by the user. Main headings are set off in bold face type for easy finding. The index is a real contribution to the field of horticulture and will be gratefully received and widely used. It may be secured at $4.00 a copy from the W. F. Humphrey Press, Geneva, New York.

❖

• **Eli Lilly and Company,** now an Associate of AIBS, was founded seventy-seven years ago. On May 10, 1876, Colonel Eli Lilly, a thirty-eight-year-old Civil War veteran, began operations as a "manufacturing pharmacist." The building where he installed his drug mills, percolators, and steam pans was—as he put it—"hardly big enough to swing a cat in." The Colonel's investment was $1,300 in that depression year. His staff consisted of two employees and his fifteen-year-old son, J. K. Lilly.

Today Eli Lilly and Company has grown into one of the world's largest pharmaceutical manufacturing houses. In Indianapolis alone, its two plants occupy fifty buildings with about 2,000,000 square feet of floor space. In addition, there are the Lilly Biological Laboratories and farm near Greenfield, twenty miles east of Indianapolis; and the Tippecanoe Laboratories near Lafayette, Indiana. Abroad, the company has manufacturing units at Toronto, Canada; Basingstoke, England, and São Pãulo, Brazil. Lilly products, which make up a price list of more than 1,250 items, are sold in more than 120 countries. Research work in the Lilly laboratories dates from 1882, when J. K. Lilly was graduated from the Philadelphia College of Pharmacy and Science and returned to the company. In time, a chemist, a botanist, and a pharmacologist were added to the research staff. This phase of the work was expanding constantly. In 1886, J. K. Lilly set up the Lilly Scientific Division. In the 1920's Lilly research men developed a series of important drugs. But the company's most important research achievement was the contribution of Lilly scientists toward the purification and mass production of insulin. On October 11, 1934, Eli Lilly and Company dedicated a new building for its Research Laboratories. The research facilities are considered among the finest in the world. Using them, Lilly scientists and medical men have produced a series of outstanding medicines. The years to come will find the more than 300 Lilly research workers dedicated as ever to the belief that "the unfettered and seeking mind holds mankind's hopes for a better, more healthful, and happier world."

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• **Dr. Ernst Mayr,** Curator of the Whitney-Rothschild Collection, American Museum of Natural History, has been appointed Alexander Agassiz Professor of Zoology in the Museum of Comparative Zoology, Harvard University. James C. Greenway, Jr., has been appointed Curator of Birds in the Museum, succeeding the late James L. Peters, and Raymond A. Paynter, Jr., has been appointed Assistant Curator of Birds.

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• Detailed information concerning the programs of the **Section of Bryology and the Section of Lichenology of the VIII International Botanical Congress** has been received in the AIBS office. The following subjects have been proposed for study in the **Section of Bryology:** *Methods of procedure in Bryology:* Family and genus monographies; requisites of illustrative drawings; regional monographies. *Systematics:* General view of several complex Moss and Hepatica genera; characteristic traits of genera in the Lejeuneaceae (stressing the importance of characters from the evolutionary

point of view); the position of *Sphagnum* in the Bryophytes. *Spore Germination, Protonemal Phases:* Germination of brood bodies; culture media; the different parts of the protonema; morphological variations according to habitat conditions. *Cytology of Bryophytes:* Nucleus, chloroplasts, nature of oil bodies. *Bog Bryophytes:* Ecological conditions; bryophyte communities; bryophyte debris in peat as indicative of the succession in the bryophytic vegetation in bogs.

All bryologists are invited to present papers pertinent to the colloquies listed above, and to participate in the discussions. Colleagues who are unable to come to the meetings may have their papers read by an attending member. The last two days of the sessions will be devoted exclusively to the delivery of papers on miscellaneous subjects and the presentation of works of recent publication.

The Section of Lichenology will consist of: I. Colloquies. The following headings are proposed: *Taxonomy:* Amendment of the classification of Lichens in line with that of autonomous Ascomycetes; the value of "chemical species" and taxonomic signification of gonidial types; setting up of family and genus monographies; resumption of the Zahlbruckner Catalogue. *Physiology:* Questions relevant to symbosis; Lichenic acids. *Phytosociology and Geography:* Drafting of a prodromus on lichenological groups; the intertropical floras. *Lichen Antibiotics:* This chapter will probably come under the special session on Antibiotics. II. Papers. Miscellaneous papers, covering other topics, will be read by their authors or their correspondents in special sessions set aside for this purpose. III. At the close of the Congress, a lichenological excursion to Western Brittany (Basse-Bretagne), is anticipated so as to enable participants to study oceanic flora and vegetation.

The Secretary of the Section of Bryology is Mme. S. Jovet-Ast, Laboratoire de Cryptogamie, 12, rue de Buffon, Paris (5°); the Secretary of the Section of Lichenology is Prof. H. des Abbayes, Faculté des Sciences, 12 bis, rue de Robien, Rennes (Ile-et-Vilaine).

❖

• **Dr. Ernst A. Bessey,** Distinguished Professor of Botany at Michigan State College, was Visiting Professor in the Department of Plant Pathology at Cornell University from April 23 until May 21. Dr. Bessey gave a series of lectures in the department on the phylogeny of the fungi and on European botanists and early United States Department of Agriculture plant pathologists and participated in mycology field trips and conferences. He also presented a public lecture entitled "Highlights in Mycological History."

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• The next scheduled meetings of the **Scientific Advisory Committees to the Division of Biological and Medical Sciences of the National Science Foundation** will be held in late autumn 1953. To be considered at these meetings proposals for research support must be received by the Foundation prior to October 1, 1953. It is anticipated that evaluation of proposals will be completed within two months after the closing date. The Foundation sponsors basic research in the biological and medical sciences in the broad fields of molecular, genetic, developmental, regulatory, systematic and environmental biology and in experimental psychology.

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• President Harlan Hatcher, of the University of Michigan, has announced that the **Crustacean Collection of the Museum of Zoology at the University of Michigan will be given to the U. S. National Museum.** The collection is a rather large one with particularly good specimens from the regions of the Great Lakes and the Ozark Plateau.

• On April 9th **the National Science Foundation announced the approval of 60 grants,** totalling $469,550 in the biological and physical sciences and to support studies and conferences on science and scientific education. A list of the grants made in the biological sciences, including institution and name of the principal scientist follows: S. L. Washburn (University of Chicago), W. F. Blair (University of Texas), C. Tanford (State University of Iowa), M. A. Jakus (Retina Foundation, Boston), A. W. Galston (California Institute of Technology), T. H. Bullock (University of California), L. R. Cleveland (Harvard University), Harriet Harvey (University of Oklahoma), J. L. Solinger (Simmons College, Boston), G. Pincus (Worcester Foundation for Experimental Biology, Shrewsbury), E. L. Cockrum (University of Arizona), V. M. Tanner (Brigham Young University), H. Croasdale (Dartmouth College), M. D. Rogick (College of New Rochelle), W. C. Steere (Stanford University), A. H. Holmgren (Utah State Agricultural College), S. D. Durrant (University of Utah), and P. B. Armstrong (Marine Biological Laboratory).

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• **National Entomological Societies Merge.** On January 1, 1953, the two national entomological societies, the former Entomological Society of America and the American Association of Economic Entomologists, were united. The resultant single society, representing all phases of the science of entomology, has taken the appropriate name, **The Entomological Society of America.** Each of the amalgamating societies brings a distinguished reputation into the new organization. With entomologists of the state agricultural experiment stations taking the initiative, the American Association of Economic Entomologists was organized at a meeting in Toronto, Canada, in 1889. The Entomological Society of America was organized in 1906 in response to a need for a society in which emphasis would be placed on non-economic phases of entomology. Professor J. H. Comstock, of Cornell University, himself a charter member of the Association, was chosen as the first president of the Entomological Society; and the two societies have held what were to all intents and purposes joint meetings every year, with the exception of 1942 when conditions resulting from the war caused omission of the annual meetings, and in 1945 when the Association met at Dallas, Texas, and the Entomological Society met with the American Association for the Advancement of Science at St. Louis, Missouri.

Although the two organizations had supposedly different interests it was apparent from the beginning that in reality these interests overlapped widely; and as time passed it became increasingly evident that no clear line of demarcation between the two fields could be recognized. Merger of the two societies was considered many years earlier, but it was not until 1949 that a serious effort in that direction was undertaken. That year each society appointed a committee of three men to consider the feasibility of such a merger and to make recommendations to their respective societies. After presenting preliminary reports in favor of amalgamation at the Tampa, Florida, meeting in December, 1949, the two committees continued as a joint committee to draw up a proposed Constitution and By-Laws, which were presented to the membership of each society at Denver, Colorado in December, 1950, together with recommendations for procedure to effect the amalgamation. After due deliberation the merger proposal was submitted, by mail, to the membership of each society early in 1951. Ratification required a favorable vote by a two-thirds majority of the membership of each organization. The Association, in 1951, and the Society, in 1952, voted to ratify the new Constitution, making it possible for the newly constituted Entomological Society of America to begin functioning as of January 1, 1953.

During the current year an Interim Governing Board, composed of the Executive Committees of the two former organizations, is conducting the affairs of the Society, and a full-

time Executive Secretary will be selected by the Board. Dr. Charles E. Palm, of Cornell University, is President of the Society for 1953, and Herbert H. Ross, of the Illinois State Natural History Survey, is President-Elect. The Constitution provides that the President-Elect shall serve in that capacity for one year and is then to become President. In 1953 a President-Elect, for 1954, and the Governing Board will be chosen by members of the various Branches and Sections, in accordance with prescribed procedures.

The Society will continue to publish the *Annals of the Entomological Society of America* and the *Journal of Economic Entomology*. Each of these journals will appear in its forty-sixth volume in 1953. The *Index of American Economic Entomology* and *Memoirs of the Thomas Say Foundations* will continue to be published intermittently. *Entoma*, a directory of insect and plant disease control, will be continued, and a new monthly Bulletin, to contain current items of general interest, will also be issued.

The amalgamation should result in a society even stronger than the sum of its component parts, a society that can give effective support not only to all aspects of applied entomology but also to research in such fundamental fields as insect physiology, taxonomy, toxicology, bionomics and insecticidal chemistry. It will serve the interests of all the entomological fields with a greater singleness of purpose and will enhance the already considerable reputation of the science.

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• **Scientific visitors to the U. S.** from abroad during the next few months include: *Dr. K. L. Blaxter*, Hannah Dairy Research Institute, U. K., is to attend the Gordon Research Conference in New Hampshire, August 24-29, and then spend three of four weeks visiting certain laboratories. Sponsors: Agricultural Research Council and the organizers of the Conference. Address: c/o United Kingdom Scientific Mission, 1800 K St., N. W., Washington, D. C.

Dr. G. Fegler, Institute of Animal Physiology, U. K., plans to attend the XIX International Physiological Congress in Montreal from August 31 to September 5. Sponsor: Agricultural Research Council. Address: c/o U. K. Scientific Mission, 1800 K St., N. W., Washington, D. C.

Dr. S. J. Folley, National Institute for Research in Dairying, U. K., will attend the XIX International Physiological Congress in Montreal from August 31 to September 5 and the Laurentian Hormone Conference which begins immediately afterwards. Sponsors: Agricultural Research Council and the organizers of the Conference, Address: c/o U. K. Scientific Mission, 1800 K St., N. W., Washington, D. C.

Dr. Greenwood, Director of the Agricultural Research Council's Poultry Research Centre, Edinburgh, plans to attend the meeting of the Poultry Science Association in Vancouver and make various visits in Canada and U.S.A. during the period August 7-October 2. His itinerary includes: Quebec City; Montreal; Ottawa; Winnipeg; Saskatoon; Edmonton; Toronto; Vancouver; Chicago; Columbus, Ohio; Lafayette, Ind.; East Lansing, Michigan; Washington; New York. Sponsor: Agricultural Research Council. Address: U. K. Scientific Mission, 1800 K St., N. W., Washington, D. C.

Dr. Catherine Hebb, Institute of Animal Physiology, plans to take advantage of a private visit to Canada to attend the XIX International Physiological Congress in Montreal, August 31-September 5. Address: c/o U. K. Scientific Mission, 1800 K St., N. W., Washington, D. C.

Dr. J. L. Linzell, Institute of Animal Physiology, U. K., plans to attend the International Physiological Congress in Montreal, August 31-September 5. Sponsor: Agricultural Research Council. Address: U. K. Scientific Mission, 1800 K St., Washington, D. C.

Dr. Mount, Institute of Animal Physiology, U. K., attending the XIX International Physiological Congress, Montreal, August 31-September 5. Sponsor: Agricultural Research Council. Address: U. K. Scientific Mission, 1800 K St., N. W., Washington, D. C.

Constantin Moutoussis, Rector and Professor of Microbiology, University of Athens, Greece, is here on a 120-day grant (P. L. 402) which began April 27, for a program arranged by the Department of Health, Education and Welfare. Address: Hotel National, Washington, D. C. or c/o Miss Elizabeth Jorzick, Acting Chief, Programs Branch, Leaders Division, Department of State (ext. 2657 or 5664).

Carl Hendrik Nordlander, Under Secretary of Agriculture, and Acting Director of the Royal Agricultural Board, Sweden, is here on a 90-day grant (P. L. 402) begininng May 1. Address: Hotel National, Washington, D. C. or c/o Miss Elizabeth Jorzick, Acting Chief, Programs Branch, Leaders Division, International Information Administration, Department of State (ext. 2657 or 5664).

Dr. B. G. Peters, Head, Nematology Department (Agricultural Research Council) at Rothamsted, U. K. is to spend two or three months at the Connecticut Agricultural Experiment Station to study their nematode problems, advise on research and discuss eel-worm work with the staff and local potato growers. Some travel in eastern states. Sponsor: Connecticut Agricultural Experiment Station. Period of U. S. visit: March 26-July 29. Address: U. K. Scientific Mission, 1800 K St., N. W., Washington, D. C.

Dr. J. W. G. Porter, National Institute for Research in Dairying, U. K., plans to attend the Gordon Research Conference in New Hampshire, August 24-29. Sponsor: organizers of the conference. Address: U. K. Scientific Mission, 1800 K St., N. W., Washington, D. C.

Dr. I. W. Rowlands, Institute of Animal Physiology, U. K., plans to attend the XIX International Physiological Congress in Montreal, August 31-September 5. Sponsor: Agricultural Research Council. Address: U. K. Scientific Mission, 1800 K St., N. W., Washington, D. C.

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• **Zoologists planning to attend the XIV International Congress of Zoology** this summer will be interested to know that it is now possible to obtain a considerable reduction on normal airline rates if a sufficiently large number of delegates are prepared to travel as a group.

Provisional reservations have been secured for 15-20 delegates and their families or friends to travel from New York on Monday, August 3 at 10:00 p.m. The price, $462.43, includes all meals and bus transportation to and from the airport. Delegates need *not* return to New York as a group, but may travel individually.

Those interested should notify the Secretary-General, Dr. Anton Fr. Bruun, Krystalgade 27, Copenhagen K, Denmark, as soon as possible.

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• **The Lilly Research Laboratories** of Indianapolis, Indiana, through the National Research Council **have conferred four Postdoctoral Fellowships in the Natural Sciences.** These fellowships, which are open only to citizens of the United States, are available in those sciences fundamental to the understanding of biological phenomena, especially in the borderline fields between chemistry, biology and physics. Applicants must have had training in one of the natural sciences equivalent to that represented by the Ph.D. or Sc.D. degree; candidates of extraordinary competence and promise who have had one or two years of postdoctoral experience are also eligible. This year's winners, with their subjects of study, institutions and advisors, are as follows:

Dr. Howard Marvin Dintzis, Boston, Mass., for physical chemical studies on protein-protein interactions under the direction of Prof. John G. Kirkwood, Dept. of Chemistry, Yale University.

Duane T. Gish, Concord, California, for undertaking the solution of some of the problems involved in the syntheses of the polypeptides of the oxytocic and vasopressor hormones, under the direction of Dr. Vincent du Vigneaud, at the Medical College of Cornell University.

Howard E. Zimmerman, New Haven, Conn., for research on the stereochemistry of Beta-hydroxyacids under the direction of Dr. Robert B. Woodward at Harvard University.

Dr. David Swenson Hogness, Paris, France, renewal award for research in biochemistry, under the direction of Dr. Jacques Monod at the Institut Pasteur in Paris.

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• **Five Merck Senior Postdoctoral Fellowships in the Natural Sciences** have been awarded by the National Research Council for the year 1953-54. These fellowships have been given yearly since 1947 for the purpose of giving advanced education, training and development to young scientists with proven ability in research in the physical, chemical or biological sciences who wish to broaden their fields of investigational activity by acquiring familiarity with another area. Open only to citizens of the United States, applicants are eligible who have had training in physics, chemistry or biology equivalent to a Ph.D. degree and who have had at least three years of professional experience in their major field, only one of which may have been fellowship work. This year's winners include:

Dr. Paul J. Allen, Madison, Wis., who will study metabolism and enzymes in relation to obligate parasitism at the University of Sheffield, England, under the direction of Prof. Hans A. Krebs.

Dr. Donald H. Bucklin, Norwood, Mass., renewal award for continued research in embryology at Harvard University under the direction of Prof. Carroll M. Williams.

Dr. Edwin W. Fager, Chicago, Illinois, who will conduct a quantitative study of the succession of animal communities in logs at Oxford University under the direction of Dr. Charles Elton.

Dr. Morgan Harris, University of California, Berkeley, for research in the biochemical aspects of adaptation and variation in microorganisms at the Universite de Paris under the direction of Dr. Boris Ephrussi.

Dr. Robert G. Parrish, Cambridge University, England, renewal award for continued study and research in Biochemistry at Cambridge under the direction of Dr. J. C. Kendrew.

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• **The National Research Council has awarded twelve Postdoctoral Fellowships,** supported by the Rockefeller Foundation, for the year 1953-54. These fellowships, open to citizens of the United States and Canada, are given to promote the training of investigators in basic research in the natural sciences. Lionel F. Jaffe, Pasadena, California, one of the winners, will conduct researches on the development of polarity in the Fucales egg at the Hopkins Marine Station, Stanford University, under the direction of Prof. Lawrence Blinks. Dr. Joseph B. Griffing, Ames, Iowa, will conduct research in the field of quantitative inheritance, with particular emphasis on statistical techniques at the University of Cambridge, England, under the direction of Dr. Ronald A. Fisher.

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• **The Scientific Manpower Commission,** organized recently by eight major scientific societies, has opened a Washington office at 1530 P Street, N. W. Gladys M. Keener, former executive editor of *Science* and *The Scientific Monthly*, has been appointed to organize and manage office operations, and Dr. Howard Meyerhoff, President of the Commission, will direct activities until a permanent staff has been appointed. Sixteen scientists, nominated by the participating societies, will make up the Commission, which will study the nation's needs for scientists in education, industry, government service and the armed forces, and will direct its efforts toward bringing the scientific manpower supply and demand into adjustment under changing international and economic conditions. All but two of the places on the Commission are now filled. Besides Dr. Meyerhoff, who was elected President, E. G. Begle, of Yale University will serve as Vice-President and Milton O. Lee, of the Federation of American Societies for Experimental Biology, was elected Secretary-Treasurer. Other members are: Henry A. Barton, American Institute of Physics; Detlev W. Bronk, National Academy of Sciences; Stewart S. Cairns, University of Illinois; Leonard Carmichael, Smithsonian Institution; M. T. Carpenter, Standard Oil Company of Indiana; Frank P. Cullinan, U. S. Department of Agriculture; George R. Harrison, Massachusetts Institute of Technology; John S. Nicholas, Yale University, Joseph H. Roe, George Washington University; B. R. Stanerson, American Chemical Society; and Dael Wolfle, Commission on Human Resources, National Research Council. Incorporated in the District of Columbia, the Scientific Manpower Commission was established through the cooperation of the American Association for the Advancement of Science, American Chemical Society, American Geological Institute, American Institute of Biological Sciences, American Institute of Physics, American Psychological Association, Federation of American Societies for Experimental Biology, and the Liaison Committee of the Mathematical Societies. Other private scientific societies will presumably work through the Commission now that it is organized.

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• Further information has been received in the AIBS office about the **XIX International Physiological Congress,** to be held August 31-September 4, 1953, in Montreal, Canada. Membership in the 19th Congress will be limited to 3,000 scientists from countries outside Canada and the U.S.A. and from the appropriate national societies in both countries. Application from Canadian and American scientists who are not members of their national societies (the six societies comprising the Federation of American Societies for Experimental Biology, the Society of General Physiologists, and the Canadian Physiological Society) will be accepted up to the number that can be accommodated. The scientific meetings, beginning Tuesday, September 1, at 9:00 a.m., will be divided between McGill University and the Universite de Montreal. Individual communications will be given at McGill University in approximately ten simultaneous sessions. Abstracts of all communications accepted will be printed in a single volume, which will be distributed to the members upon registration. Special symposia, which will be given at the Universite de Montreal, have been arranged on the following topics: Physiological Theories of Learning, Haemodynamics in Small Vessels, Physiology of Cold, Mechanism of Formation of the Thyroid Hormone, Metabolic Influence of Insulin, Postural Mechanisms, and Reflexes from the Cardiac and Pulmonary Areas.

The American Physiological Society has been designated by the Department of State as the Sponsor of an Exchange-Visitor Program. It is aiding in arranging and facilitating temporary research, lecturing or consulting engagements in the fields of physiology, biophysics, pharamacology, biochemistry and related fields at various American educational institutions, laboratories, or U. S. Government agencies, for certain qualified visitors attending the Congress. Lists of individuals already invited, with the dates of their itineraries, can be secured from Dr. E. M. Landis, Chairman of the Committee, Harvard Medical School, 25 Shattuck Street, Boston 15, Mass. Those who wish to invite one or more foreign members of the Congress to their institutions and who have available supporting honoraria and/or payments of travel expenses, should proceed themselves to send a specific invitation. When the same speaker is desired by neighboring universities or institutions, a suitable collective itinerary and invitation might be arranged. Through the efforts of the Federation Liaison Committee, funds amounting to about $60,000 have been donated by various industrial firms in the U. S. and from other sources to aid in the travel of scientists from abroad.

From the SOCIETIES

• **The Botanical Society of America has appointed a standing Committee on Education** to continue to study the role and status of plant science and to promote improvement in the teaching of botany in American colleges and universities. The Committee has been authorized to coordinate opinion, formulate policy, and represent the Botanical Society in educational matters. It aims to promote the adequate development of botany in biology programs and to see that plant science plays its proper role in American education, and in the interest of national welfare. It will advise and assist colleges and universities in this regard, as well as on problems affecting the status of botany and botanists in their institutions. The members of the Committee are: Sydney S. Greenfield, The Newark Colleges, Rutgers University, Chairman of the Committee: Harlan P. Banks, Cornell University; Vernon I. Cheadle, University of California, Davis, California; Ralph E. Cleland, Indiana University; Harriet B. Creighton, Wellesley College; Secretary, Botanical Society of America; A. Orville Dahl, University of Minnesota; Victor A. Greulach, University of North Carolina; Irving W. Knobloch, Michigan State College; and William C. Steere, Stanford University. The Committee will be pleased to receive comments and suggestions relevant to its work.

• **The Botanical Society of America has established a Committee on Guidance.** The Committee is now assembling a bibliography of existing material on guidance and welcomes statistical information and prognoses on professional positions in the plant sciences. Material should be sent to Robert K. Zuck, Department of Botany, Drew University, Madison, New Jersey, Chairman of the Committee.

• Arrangements are being made by the **American Fern Society** for a **six-day field trip,** August 30 through September 5, in northern Michigan, to precede the AIBS meetings at Madison, Wisconsin. Dale J. Hagenah, 164 Westchester, Birmingham, Michigan and W. G. Wagner, Jr., Department of Botany, University of Michigan, Ann Arbor are leaders of the trip. Mrs. Kathryn E. Boydston, Fernwood, Route 3, Niles, Michigan is Secretary and all who plan to make the trip or any part of it should contact Mrs. Boydston.

The excursion will cover a wide range of pteridophyte localities and stress as much as possible rare or controversial species and unusual habitats, as these are illustrated in the flora of the northern Lower Peninula and in the Upper Peninsula of Michigan. Many of the localities to be visited represent stations for new and as yet unpublished records resulting from recent field work by the leaders of the trip. The foray will begin from Alpena, Michigan on Sunday evening, August 30th. Since Alpena is served only by bus transportation it is suggested that arrangements to meet in Ann Arbor or Detroit be made by those requiring transportation, and those willing to take passengers. The trip will end Saturday, September 5th, at Iron Mountain, Michigan, which is about 225 miles northeast of Madison. Arrangements will be made for accommodations in hotels or motels at each overnight stop, with the exception of two nights at the University of Michigan Biological Station at Douglas Lake. All meals will be in restaurants, and the Committee will not make advance arrangements for these.

• **The Annual Foray of the American Bryological Society** will be held in the vicinity of Madison, in the Driftless Area of Wisconsin, on Sept. 5 and 6. Drs. John W. Thomson and Richard I. Evans, will lead the two trips. The program and business meeting of the society will be held on Sept. 7. Any one interested in these trips and not a member of the American Bryological Society should write to the Vice-President of ABS, Dr. G. J. Ikenberry, Dept. of Botany and Plant Pathology, Oklahoma A & M College, Stillwater, Oklahoma.

• **The thirty-third annual meeting of the American Society of Ichthyologists and Herpetologists** was held in New York City, April 22-26. The American Museum of Natural History and the New York Zoological Society were sponsoring institutions. About 135 members from 20 states and two foreign countries attended the sessions. 43 papers were presented. A highlight was a tour of the New York Zoological Park. Prizes were given for the best student papers. The herpetological prizes were won by J. M. Savage of Stanford University, and Richard Highton of the University of Florida. The ichthyological prize was won by Norman J. Wiliminosky of Stanford University. Next year's meeting will be held with the AIBS at the University of Florida, in September, 1954.

New officers elected for the year beginning January 1, 1954, include: President—Charles M. Bogert, American Museum of Natural History, New York 24, New York. Vice-Presidents—(Conservation) John Tee-Van, New York Zoological Society, New York, N. Y.; (Finance) George P. Meade, Colonial Sugars Company, Gramercy, Louisiana; (Membership) Reeve M. Bailey, University Museums, Ann Arbor, Michigan. Treasurer—Coleman J. Goin, Department of Biology, University of Florida, Gainesville, Florida. Secretary—Arnold B. Grobman, Department of Biology, University of Florida, Gainesville, Florida.

• **"Nature on Edge" is the theme of the 53rd Annual Meeting of the Society of American Foresters** to be held in Colorado Springs, Colorado, September 14-17th. Headquarters will be in the Antlers Hotel. President George L. Drake of Shelton, Wash. will open the general sessions in the municipal auditorium. Eleven technical sessions have been scheduled for members with specialized interests in forest management, silviculture, forest products, private forestry, forest economics, watershed management, forest recreation, forest-wildlife management, range management, public relations, and forestry education. Field trips have been arranged for the final day of the meetings to acquaint foresters from other sections of the country with land management problems in the Rocky Mountain region.

• The Secretary pro tem of the **Botanical Society of America** would like to correct an error that appeared in "call for nominations of officers." The office of Treasurer is not open for nominations since the present Treasurer has four years of office to serve.

• **The Ecological Society of America, Committee on Ecological Life Histories,** is sponsoring a series of outlines for life history studies. Reprints of the following are available: 1. Outline for ecological life history studies of herbaceous plants. 2. Ecological life history outlines for fungi. 3. An outline for ecological life histories of herbaceous vascular hydrophytes. Reprints may be obtained from Murray F. Buell, Secretary of the Ecological Society of America, Rutgers University, New Brunswick, N. J. The cost of each reprint is 10¢ (postage stamps acceptable).

• The meeting of the **American Society for Horticultural Science** to be held at the University of Wisconsin, September 7-9, **marks the 50th Anniversary of the founding of the**

Society. This Society which now has a membership of nearly 1,500, with many foreign countries represented, was founded in 1903 in Horticultural Hall of the Massachusetts Horticultural Society in Boston, Mass. At Madison, the American Institute of Biological Sciences and the Society of Sigma Xi will sponsor the Monday night meeting commemorating the event.

The address will be delivered by Dr. E. J. Kraus on the subject "The Significance of Growth Regulatory Substances in Horticultural Practice." Dr. Kraus, formerly head of the Department of Botany of the University of Chicago, was for some years a member of the staff of the Department of Horticulture at the University of Oregon, and was recently voted one of the greatest living horticulturists. Charter members of the Society will receive special recognition at the annual banquet to be held Tuesday evening, September 8.

• **The American Physiological Society** held its annual meeting in Chicago, April 6-10, in conjunction with the Societies of the Federation of American Societies for Experimental Biology. The following officers will begin serving July 1953: President: E. F. Adolph, School of Medicine & Dentistry, University of Rochester, N. Y.; President-Elect (Secretary-Treasurer): H. E. Essex, Mayo Clinic Foundation for Experimental Medicine, Rochester, Minn.; Executive Secretary: Milton O. Lee.

• **The American Society of Plant Physiologists** is planning a four-day program of papers and symposia at Madison. Contributed papers will be presented jointly with the Physiological Section of the Botanical Society of America. A Monday afternoon symposium on *Photoperiodism* is planned jointly with the American Society for Horticultural Science and a Thursday morning symposium on *Localization of Enzymes in Relation to Function* will be held with the Physiological Section. Thursday afternoon will be devoted to papers received after the deadline and to an "Open House" at the laboratories of the Botany Department of the University of Wisconsin.

• **The Division of Biological Sciences and the Michigan Memorial-Phoenix Project of the University of Michigan will sponsor the Fourth Annual Biological Symposium,** July 6-17th, 1953. The subject of the symposium will be *Radiation Biology* and the following speakers will take part: *G. W. Beadle* (California Institute of Technology), "Effects of radiation on mechanisms of heredity," "The use of radiation in studies of gene action," "Gene function"; *Roberts Rugh* (Columbia University), "Effect of ionizing radiations on vertebrate embryonic growth and development," "Schedule of radiosensitivities of the mammalian fetus," "Hazards to the fetus and protection against ionizing radiations"; *A. H. Doermann* (Oak Ridge National Laboratory), "Contributions of radiation experiments to an understanding of bacteriophage," "Present views on the genetic organization of the replicating unit of bacteriophage"; *Henry Eyring* (University of Utah), "Target action and indirect action of radiation on enzyme molecules," "Kinetic interpretation of radiation injury," and "The chemical groups attached by radiation."

• The 1953-54 officers of the **Phycological Society of America** are: President: Edwin T. Moul: Vice-President: G. W. Prescott; Treasurer: Richard D. Wood; Secretary: Elwyn O. Hughes, National Research Council of Canada, Ottawa, Canada.

The A·I·B·Scope

• **The AIBS Associates Committee is sponsoring a symposium on "Biology and Industry"** to be held during the meeting at Madison. The following topics will be discussed: "The Impact of Chemistry on Modern Agriculture" by Francis J. Curtis, Vice-President, Monsanto Chemical Company; "Biological Aspects of the Tobacco Industry" by C. J. Nussbaum, Plant Pathologist, North Carolina State College; "Industrial Applications of Microbiology" by Asger F. Langlykke, Director of Research, Squibb Institute for Medical Research.

• **The Advisory Committee on Biochemistry to the Office of Naval Research** under the chairmanship of Dr. Cornelius van Niel met at Madison, Wisconsin, on April 4th. The Committee reviewed for scientific merit approximately twenty new proposals and a number of currently supported contracts.

• On April 11th the **Advisory Committee on Physiology to the Office of Naval Research** met in Chicago, Illinois, to evaluate on their scientific merits nearly forty new proposals and currently existing projects. This committee is under the chairmanship of Dr. Ralph W. Gerard.

• The Advisory Committee on Hydrobiology, under the chairmanship of Dr. Robert Hiatt, announces that the new **Directory of Hydrobiology Laboratories and Personnel** is being prepared for the printer and should be available early in the fall.

PRESS RELEASES FOR THE MADISON MEETINGS

Many biological societies publish abstracts of the papers presented during their annual meetings. Others do not. It is, therefore, impossible to supply the science writers who attend such meetings with representative material on which to base stories. For this reason the Societies that intend to meet at Madison in September and the AIBS staff wish to make the following announcements and requests of authors who expect to give papers during these meetings.

• During the final Local Committee meeting in June, a panel of representatives from each field of biology will evaluate the titles submitted.

• Several hundred authors of papers that are adjudged both meritorious and *newsworthy* will be contacted during the latter part of June and asked to prepare press releases of their dissertations.

• The News Services on the various campuses will also be contacted and asked to offer assistance or advice, if needed, in the preparation of these releases.

• Each Society meeting at Madison is appointing a Publicity Representative who will spend considerable time in the Press Room and will be available for consultation by the Press.

• It is felt that the combination of press releases prepared in a standard manner and the professional advice of specialized biologists should result in especially good and accurate coverage of the research highlights presented during this year's AIBS-sponsored meetings.

• If you receive a request for a press release of your paper, **PLEASE** cooperate to the fullest. Only through the continual cooperation and interest of ALL biologists, can the contributions of biology be accurately described to the reading public.

The BIOLOGY LIBRARY

One copy of each publication submitted for listing should be sent to the Editor, The AIBS Bulletin, 2101 Constitution Avenue, Washington, D. C. Only books published within a year of receipt will be reviewed. Older books will be listed.

Advances in Cancer Research. Vol. I. Edited by J. P. GREENSTEIN and A. HADDOW. 590 pages. Academic Press Inc., 125 East 23rd Street, New York 10, N. Y. (1953) $12.00.

The Editors write, "Few more notable expressions of faith in our times are evident than in the public and private support granted in many lands to the subject and field of cancer research. As the search for the understanding of cancer proceeds, new scientific approaches develop and are emphasized, and older ones, for the time being perhaps, subside and diminish. It is the purpose of the Editors that this and succeeding volumes of the series shall reflect this steady and inevitable march of the tides of our knowledge and increasing understanding." Contributors to Volume I include: C. A. Coulson, E. V. Cowdry, L. Dmochowski, W. U. Gardner, R. J. C. Harris, Charles Heidelberger, Elizabeth C. Miller, James A. Miller, W. C. J. Ross, Herbert Silverstone, Albert Tannenbaum and Richard J. Winzler.

Bacterial and Mycotic Infections of Man. Edited by RENÉ J. DUBOS. 900 pages, 98 illustrations. J. P. Lippincott Co., East Washington Square, Philadelphia 5, Pa. (2nd edition, 1952) $7.50.

This is the second edition of a voluminous textbook on bacteriology for use in medical schools and by practitioners. A total of thirty-six eminent persons in the field have collaborated to make this book a complete and detailed text. Subjects discussed include: the disease-causing properties of bacteria, host response, classes of bacteria, applied medical bacteriology, and principles of chemotherapy and epidemiology. The first edition is brought up-to-date in this edition by the inclusion of new material on recent advances in infectious diseases.

The Bile Pigments. C. H. GRAY. 142 pages, 29 illustrations. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. (1953) $1.75.

The aim of this book is "to provide a readable, useful and brief account of the bile pigments, particularly in relation to man, and it is therefore hoped that readers will include biochemists and medical men." The term "bile pigments" is taken to include those substances whose molecules consist of a chain of four pyrrole rings as well as some derivatives such as dipyrrl compounds. Porphyrin pigments found in bile, such as coproporphyrin or the phylloerythrin derived from chlorophyll, are thus excluded. A small text, it is a Methuen publication, printed in Great Britain. The author is Professor of Chemical Pathology in the University of London.

The Birds of Crater Lake National Park. DONALD S. FARNER. 187 pages. Crater Lake Natural History Association, Crater Lake, Oregon. (Via Ft. Klamath) (1952) $1.40.

The author of this small ornithological treatise has been associated with the Crater Lake area for many years as one of the staff at Crater Lake Park. His objectives in publishing such a volume are fourfold: to provide a much-needed inventory for the region; to provide the interpretive or naturalist organizations of the Park with basic information; to provide the interested Park visitor with a source of information concerning the birds which he may expect to see in the Park, together with details on where and when he may see them; and finally it is hoped that this treatise may contribute to a better understanding of the distribution and habits of the birds of the High Cascades and stimulate further study of the avifauna of the region.

Birds and Mammals of the Sierra Nevada. LOWELL SUMNER and JOSEPH S. DIXON. 484 pages, illustrated. University of California Press, Berkeley 4, California. (1953). $7.50.

This book is a guide to the birds and mammals of the Sierra Nevada region and contains information about their distribution. It will serve admirably as a handbook for the nonscientific visitor and as a useful manual for the professional zoologist. Valuable information is included on life histories, habitats, and distribution of the various species. Eight color plates, 46 black-and-white illustrations, a map showing the principal physical features of the region and a life-zone map add to the value of the book.

Blood Cells and Plasma Proteins: Their State in Nature. Edited by JAMES L. TULLIS. 436 pages, graphs and tables. Academic Press Inc., 125 East 23rd St., New York 10, N. Y. (1953) $8.50.

This book, which is the second in a series of "Memoirs of the University Laboratory of Physical Chemistry Related to Medicine and Public Health," is an outgrowth of a series of seminars delivered at Harvard University during the spring of 1951. Each chapter is written by a leader in the field and covers the present state of knowledge of blood and its components. The subject matter has been organized into seven categories: The Formed and the Fluid Parts of Human Blood, The Factors Concerned with Blood Coagulation, The Components of Human Blood Concerned with Immunity, Erythrocytes, Leucocytes, The Enzymes of Plasma and The Lipoproteins of Blood and Other Tissues.

Faunal and Archeological Researches in Yucatan Caves. (Bulletin 33) ROBERT T. HATT, *et al.* 119 pages, figures and photographs. Cranbrook Institute of Science, Bloomfield Hills, Michigan. (1953) $2.50.

The excavations, subject of this Bulletin, were undertaken with the object "of determining sequential changes in Yucatan's vertebrate land faunas and with the hope of correlating faunal findings with the history of human occupation of the Yucatan Peninsula." The Introduction and the chapter on Mammals are written by Robert T. Hatt; the section on Birds by Harvey I. Fisher; Amphibians and Reptiles by Dave A. Langebartel and the Archeological Findings by George W. Brainerd. Anyone interested in Mexican fauna, past or present, will find curious facts and findings in this report of cave discoveries.

The Ferns and Fern Allies of Wisconsin. R. M. TRYON, JR., N. C. FASSETT, D. W. DUNLOP, and M. E. DIEMER. 158 pages, 215 figures. The University of Wisconsin Press, 811 State Street, Madison, Wisconsin. (2nd edition, 1953) $3.50.

The ferns of Wisconsin are represented by three families: the Polypodiaceae, Osmundaceae and Ophioglossaceae; the fern allies are represented by five families: the Salviniaceae, Equisetaceae, Lycopodiaceae, Selaginellaceae and Isoetaceae.

All of the species known to grow in the state are described. The names used have been brought into line with those in the 8th edition of *Gray's Manual*. The range maps have been made more nearly complete by the addition of localities discovered since the publication of the first edition in 1940.

Free and Unequal: The Biological Basis of Individual Liberty. ROGER J. WILLIAMS. 177 pages. University of Texas Press, Austin, Texas. (1953) $3.50.

Every scientist and every educated layman should find this book both interesting and provocative. The author, an outstanding biochemist, writes in a most convincing manner about the biological basis of human variation and individuality. Dr. Williams says in his introduction, "When one mentions the word genetics, it inevitably brings to some people's minds the idea of setting up a program of human breeding which will improve the race. This is certainly *not* what I am advocating. I am not concerned with getting better or different people by human breeding; I am concerned with the basic problem of human life today, *understanding the people we already have!*" The biologist, who may know a great deal about the biochemical differences that distinguish individuals, will perhaps have new ideas and applications of these data presented to him, and the non-scientist, who may have been exposed to the thesis of the book, will read of the biological phenomena that give fact to theory. Whether the reader agrees with Dr. Williams or not, the book will serve the purpose of making him think, and it is doubtful if the validity of the thesis itself will be challenged.

Fresh-water Invertebrates. ROBERT W. PENNAK. 769 pages, 170 figures. The Ronald Press Company, 15 East 26th Street, New York 10, N. Y. (1953) $14.00.

Dr. Pennak is to be congratulated for attempting such an immense task—writing a comprehensive work on American fresh-water invertebrates. The result should prove extremely useful to biologists and zoologists generally, and to aquatic zoologists, limnologists, fish biologists and entomologists in particular. Natural history, ecology and taxonomy have been emphasized; details of anatomy and physiology have been minimized. For the most part, only free-living, fresh-water invertebrates that occur in the United States are included. Cestodes, trematodes, parasitic nematodes, etc., are omitted. Some chapters, dealing with small or comparatively stable taxonomic groups, contain keys to species, while others, concerned with larger taxonomic groups, contain keys to genera only. The references at the end of each chapter consist of especially significant and comprehensive works, including older classical papers as well as recent contributions. Dr. Pennak is Professor of Biology at the University of Colorado.

The Fungi. ERNST ALBERT GÄUMANN and FREDERICK LYLE WYND. 420 pages., 440 figures. Hafner Publishing Company, 31 East 10th Street, New York 3, N. Y. (1952) $10.00.

The authors describe the significant morphological features of the fungi and relate these features to the natural relationships existing within the group. Though the organization of the book follows a taxonomic pattern, the authors emphasize the *understanding* of the fungi rather than the *classifying* of them. Major biological problems illustrated by the fungi are brought to the reader's attention. The bibliography contains citations to the more recent literature.

General Biochemistry. JOSEPH S. FRUTON and SOFIA SIMMONDS. 940 pages, 126 figures and 63 tables. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. (1953) $10.00.

This book is largely based on a course in general biochemistry, given at Yale University, intended primarily for candidates for the Ph.D. in the biological sciences and in chemistry. The authors have presented the dynamic aspects of biochemistry against a background of structural biochemistry. After an introductory chapter on "The Scope and History of Biochemistry," the subject matter is presented under seven major headings: Proteins, Enzymes, Biological Oxidation, Intermediate Metabolism of Carbohydrates, Intermediate Metabolism of Lipids, Intermediate Metabolism of Nitrogen Compounds, and General Aspects of Metabolism. An extensive bibliography has been included. *General Biochemistry* should prove useful to students who wish to examine modern biochemistry from a general point of view.

General Biology. LESLIE A. KENOYER, HENRY N. GODDARD, and DWIGHT D. MILLER. 662 pages, 443 figures. Harper & Brothers, 49 East 33rd St., New York 16, N. Y. (1953) $6.00.

This textbook, designed to be used for a one-year course in biology, stresses biological principles and brings up-to-date the two earlier editions. The first section of the book is devoted to general material applicable to both zoology and botany, and is followed by a well-organized section on animals and then one on plants. The material presented in each of these later sections follows the evolutionary sequence and presents the contents logically and well.

General Physiology. BRADLEY T. SCHEER. 613 pages, 110 figures, 28 tables. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. (1953) $7.00.

This textbook of physiology is designed for use in courses for advanced students who have a background in biology, chemistry, and physics. The approach used relates the principles of physiology to the majority of organisms and analyzes phenomena in physicochemical terms. The development, growth, and integration of the organisms are emphasized.

The Genus Euglena. MARY GOJDICS. 268 pages, 39 plates. The University of Wisconsin Press, 811 State Street, Madison, Wisconsin. (1953) $6.50.

Dr. Mary Gojdics is Professor of Biology at Barat College of the Sacred Heart, Lake Forest, Illinois. She began her study of the species of the genus *Euglena* Ehrenberg 1830 at the University of Wisconsin in 1930 and has now, for the first time, brought together in one book all of the descriptive material on the members of that genus. The book is divided into four parts: General Discussion, Keys, Taxonomy, and an Annotated Check List. The author expresses the hope that "This treatise will help students to determine which species of *Euglena* they observe, and that it may increase their pleasure in working with them." It will surely fulfill that hope.

Guide to the Fishes of Colorado. WILLIAM C. BECKMAN. 110 pages. University of Colorado Museum, Boulder, Colorado (1952) $1.00.

This is Leaflet Number 11 in the University of Colorado Museum series. The author is leader of a Colorado Cooperative Fishery Research Unit and the work was sponsored by the University of Colorado Museum, Colorado A & M College, Colorado Game and Fish Department and the U. S. Fish and Wildlife Service. Simple line drawings illustrate the salient identification points of each genus and the keys given are easy to follow. Considerable game information for the state is offered as well as scientific data about the fish of the region.

Guide to the Mammals of Colorado. HUGO G. RODECK. 72 pages. University of Colorado Museum, Boulder, Colorado. (1952) $.75.

The mammals of Colorado are described in this Museum Leaflet Number 10. Excellent pen and ink drawings illustrate the text material. Since the altitude of Colorado varies from 3500 ft. to over 14,000 ft. a wide range of mammals occur within the state. They are described with sufficient detail to make identification simple and with considerable natural history added for interest.

The Harvey Lectures. Series 47. 271 pages. Academic Press Inc., 125 East 23rd Street, New York 10, N. Y. (1953) $7.50.

The 1951-52 Harvey Lectures, delivered under the patronage of the New York Academy of Medicine, were given by the following scientists: A. R. Todd, "The Nucleotides: Some Recent Chemical Research and Its Biological Implications"; F. R. Winton, "Hydrostatic Pressure Affecting the Flow of Urine and Blood in the Kidney"; H. W. Magoun, "An Ascending Reticular Activating System in the Brain Stem"; W. Barry Wood, Jr., "Studies on the Cellular Immunology of Acute Bacterial Infections"; I. L. Chaikoff, "Metabolic Blocks in Carbohydrate Metabolism in Diabetes"; Carroll M. Williams, "Morphogenesis and the Metamorphosis of Insects"; Louis B. Flexner, "The Development of the Cerebral Cortex: A Cytological, Functional and Biochemical Approach"; Walter H. Seegers, "Coagulation of the Blood"; and L. Zechmeister, "Some Biochemical Studies Based on Chromatographic Methods."

A Herd of Mule Deer. JEAN M. LINSDALE and P. QUENTIN TOMICH. 567 pages, 174 figures. University of California Press, Berkeley 4, California. (1953). $8.50.

This is a study of the mule deer, *Odocoileus hemionus columbianus*, in its natural surroundings on the Hasting Natural History Reservation. The observations reported are mainly those on wild, free animals and are supplemented by studies of the environment on the Reservation and by other published information about deer. After a brief introduction, the following topics are discussed: Structure, Communication, Mannerisms, Relation to other Animals, Habitat, Activity, Food, Reproduction, and Population. Both authors are well qualified by training and experience to analyze and interpret the results of their extensive observations on the mule deer.

Immunity, Hypersensitivity, Serology. SIDNEY RAFFEL. 531 pages. Appleton-Century-Crofts, Inc., 35 West 32nd Street, New York 1, N. Y. (1953) $8.00.

This book presents a wide coverage of the intricate fields of allergy and hypersensitivity. There is discussion of the fundamentals of immunity and the mechanisms involved. Serology and antigenic reactions are also discussed as are the resistance factors for various infectious diseases. The volume provides an excellent reference for the clinician as well as for classroom use.

Introductory Plant Science. HENRY T. NORTHEN. 601 pages, 418 photographs, line drawings, and maps. The Ronald Press Company, 15 East 26th Street, New York 10, N. Y. (1953) $5.50.

The author of this challenging new botany text is Professor of Botany at the University of Wyoming. In the preface, he states that "The beginning student needs a book that is brisk and straightforward, one which will arouse his curiosity and from which he will gain a firm knowledge of both the fundamentals of botany and the significant developments which relate botany to his own life and needs." Dr. Northen has prepared a book which successfully meets those needs. The content has been well chosen, carefully integrated and clearly presented with excellent illustrations. The role of plant science in human affairs is appropriately emphasized.

A Laboratory Manual of Comparative Embryology. ALFRED F. HUETTNER. 115 pages. The Macmillan Company, 60 Fifth Avenue, New York 11, N. Y. (1953) $1.75.

This is a laboratory guide for a course in comparative embryology. Reading assignments to the author's textbook, *Fundamentals of Comparative Embryology of the Vertebrates* (The Macmillan Company, 1949) are provided. However, this laboratory manual is adaptable for use with almost any embryology textbook now available. Space for drawings is provided and each page is perforated and can be removed from the book as desired.

Manual of Comparative Anatomy. OSMOND P. BRELAND. 256 pages. McGraw-Hill Book Company, Inc., 330 West 42nd Street, New York 36, N. Y. (1953) $4.50.

This manual for a year course in comparative anatomy includes drawing instructions for each phase of work, integrated with each section of the text. Dissection instructions are detailed enough to permit students to progress individually with a minimum of attention from the laboratory instructor. In addition to the usual animals considered in a comparative anatomy course this manual includes the perch and the pigeon.

Methods and Principles of Systematic Zoology. ERNST MAYR, E. G. LINSLEY, and R. L. USINGER. 328 pages. McGraw-Hill Book Company, Inc. 330 West 42nd Street, New York 36, N. Y. (1953) $6.00.

The principles and methods of zoological classification, or systematics, both in its purely practical aspects and in relation to evolutionary studies, are the subjects of this advanced text and reference work. The book is divided into three parts; the first dealing with the historical development of taxonomic concepts and a consideration of the species and infraspecific categories. The second discusses taxonomic procedure, including collecting and collections, identification and taxonomic discrimination, quantitative methods, presentation of findings, and the preparation of taxonomic papers. The final section deals with nomenclature, and includes principles of priority, the type method, specific and intraspecific names, generic names, family names, names of orders, classes, phyla and ethics. The senior author is Curator of the Whitney-Rothschild Collections at the American Museum of Natural History; E. G. Linsley is Chairman of the Department of Entomology and Parasitology at the University of California; R. L. Usinger teaches in the same Department and served as Alternate Member on the International Commission on Zoological Nomenclature in 1948. Each of the authors is eminently qualified to contribute to this volume, the first comprehensive book available on the principles and methods of zoological taxonomy.

Microbiology and Human Progress. MADELEINE PARKER GRANT. 718 pages, illustrated. Rinehart and Company, Inc., 232 Madison Avenue, New York 16, N. Y. (1953) $6.75.

Dr. Grant, in this textbook, presents at an introductory level, microbiology in its social and cultural aspects as well as technical data. This book is obviously designed to be used in a course for freshman students who will not go on in the field, but who wish a broad background of elementary microbiology as it relates to everyday living. This appears to be a fresh approach to courses in elementary bacteriology and illustrates the interdependence of society and science.

Mr. Tompkins Learns the Facts of Life. GEORGE GAMOV. 88 pages, 14 figures. Cambridge University Press, American Branch, 32 East 57th Street, New York 22, N. Y. (1953). $2.75.

Dr. George Gamov, recently elected a member of the National Academy of Sciences, is Professor of Theoretical Physics at the George Washington University, Washington, D. C. He is widely known for his pioneering work on the theory of atomic nuclei and for his remarkably successful writing of books of popular science. In this volume, Mr. Tompkins, the hero of two earlier books by Professor Gamov, turns his attention to biology. The presentation follows the general pattern of previous reports on Mr. Tompkins' adventures and consists of three dreams, "Through the Blood-stream," "Gene's Peace of Mind," and "Brainy Stuff" and the Professor's lecture on "The Nature of Life." Mr. Tompkins excursion into the realm of biology is quite as successful as his earlier activities in the field of physics.

The Neuron: Cold Spring Harbor Symposia on Quantitative Biology. Vol. 17. 324 pages, 261 figures and 11 plates. The Biological Laboratory, Cold Spring Harbor, New York. (1952) $8.00.

The Cold Spring Harbor Symposia were begun in 1933 by the late Reginald G. Harris, then Director of the Laboratory. With the exception of the war years they have been held every year since that date and the complete record of the papers given and the discussions evoked have been published by the Laboratory. The 1952 subject, "The Neuron," represents, in a sense, a return to the theme of the 1936 Symposium, which dealt with "Excitation Phenomena." It was felt that so many advances had been made in the sixteen intervening years that the entire subject would benefit from a review. However, the field is so vast that it was decided to limit the scope of this particular symposium to one phase of the problem, the neuron. One hundred and twenty-five scientists attended the symposium and papers were presented by thirty-eight participants.

Pigment Cell Growth. Edited by MYRON GORDON. 365 pages, illustrations. Academic Press Inc., 125 East 23rd Street, New York 10, N. Y. (1953) $7.00.

The Proceedings of the Third Conference on the Biology of Normal and Atypical Pigment Cell Growth are published in this volume. These Conferences were organized to meet the needs of biologists, chemists, physicists, statisticians and medical research workers who are studying various aspects of a common problem. Thirty-eight participants have contributed chapters in this book. The Conferences are planned at two to three year intervals; the only requirement for attendance or participation is an interest in the history of the pigment cell and in its growth. The Editor writes: the "urgency (of the problem) was revealed to all by dermatologists, pathologists, and surgeons who see, study, and carry out the recommended procedures in the treatment of the melanoma patient. The malignant potentialities of melanocytes are great. What makes them so may be understood after we know where they originate, along what route they migrate and, most important, what factors control their normal and atypical growth."

Radiations and Living Cells. F. G. SPEAR. 222 pages, 60 figures. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. (1953) $3.50.

The chapters of this book are based on lectures delivered by the author over the past ten years to medical candidates for the London University Diploma in Radiology. Much has been rewritten to bring the contents of the book into the length requested by the editors, and to have the style lie between a popular discourse and a specialist's treatise. The author has accomplished these objectives and produced an interesting introduction to the field of radiation biology.

The Role of Atomic Energy in Agricultural Research. Compiled by C. L. COMAR and S. L. HOOD. 483 pages, illustrated. Available from the Office of Technical Services, Department of Commerce, Washington 25, D. C. (1953). $3.10.

The use of radioisotopes has led to striking developments in agricultural research. For that reason, the Fourth Annual Oak Ridge Summer Symposium, held August 25-30, 1952, was devoted to a discussion of various aspects of the use of radioisotopes in agriculture. This volume contains the proceedings of that symposium. After a foreword and survey of the symposium, the papers presented are grouped under the following headings: General, Instrumentation and Methodology, Animal Nutrition Studies, Tracer Studies in Plants, Tracer Studies with Soils and Fertilizers, and Symposium on Ecological Effects of Radioactive Effluents. The Range of the topics discussed will appeal to investigators and teachers with varied interests in biology.

Some Scale-Bearing Polychaetes of Puget Sound and Adjacent Water. MARIAN H. PETTIBONE. 89 pages, 40 plates. The University of Washington Press, Seattle 5, Washington. (1953) $3.25.

This paper-bound manual describes the 30 species of aphroditoids (scaled polychaetes) found in the area of Puget Sound. A considerable amount of work has been done on the polychaetes as a group, but confusion still exists because of sketchy descriptions and synonyms. For the species of the scaled polychaetes found in the Sound, the synonymy, general descriptions with illustrations of the key characters, the habitat and associations, and the geographic distribution are included. In order to facilitate identification, general family characteristics and terminology, keys to the families, and keys to the genera and species are given.

The Statistics of Bioassay with Special Reference to the Vitamins. C. I. BLISS. 628 pages. The Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. (1952) $3.50.

A compact volume, this contribution to biostatistics deals with the application of statistics to biological assay, in particular that of vitamins. Chapters include: General Principles of Biological Assays, Dosage Response Curve and Its Error, Designs for Segregating Nonrandom Variation, Measurement of Relative Potency, Correction of Quantitative Variables: Covariance, Assays Where the Variation in Response is a Function of the Dose, Slope-Ratio Assays, and Multiple or Repeated Assays. The author teaches at the Connecticut Agricultural Experiment Station and Yale University.

The Suprarenal Cortex. Edited by J. M. YOFFEY. 232 pages. Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. (1953). $6.80.

In recent years the steroid hormones and related substances such as ACTH have become the center of a large number of investigations. *The Suprarenal Cortex* was appropriately chosen as the subject of the Fifth Symposium of the Colston Research Society, held at the University of Bristol, April 1-4, 1952. The papers contained in this volume are the contributions presented at that Symposium and offer a summary of the research involved in many of those investigations. The broad picture of the field thus presented includes the chemistry of ACTH, the physiology of the suprarenal cortex and its effects on various processes, both physical and mental. The volume ends with discussions on recent developments in the clinical uses of cortical steroids, particularly in relation to rheumatic diseases.

Teamwork in Research. Edited by GEORGE P. BUSH and LOWELL H. HATTERY. 191 pages. The American University Press, 1901 F Street, N. W., Washington 6, D. C. (1953) $4.00.

This volume is adapted from the proceedings of the Third Institute on Administration of Scientific Research and Development presented at Washington, D. C., by the American University with the cooperation of the National Research Council and the American Association for the Advancement of Science. After an introduction on the "Nature of Research Teamwork," the discussions, by a group of outstanding contributors, are arranged under four general headings: Organization for Teamwork, Personnel Factors in Teamwork, Aids to Teamwork, and Case Examples of Teamwork. The conclusion is entitled "Teamwork in Research: A Commentary and Evaluation." *Teamwork in Research* is a pioneer treatment of an important present-day scientific problem.

Testing Agricultural and Vegetable Seeds. Prepared by personnel of the Seed Act Division, Grain Branch, Production and Marketing Administration, with the assistance of members of the Division of Forage Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Department of Agriculture. 440 pages, illustrated. For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. (1952) $4.00.

This manual brings together much valuable practical information in the field of seed technology. It has been prepared primarily as a working tool to be used in reducing variations in test results by standardizing procedures, equipment, and interpretations. The information is presented in a concise and usable form.

A Textbook of General Botany. GILBERT M. SMITH. GEORGE S. BRYAN. RICHARD I. EVANS. EDWARD M. GILBERT. and JOHN F. STAUFFER. 606 pages, 429 figures. The Macmillan Company, 60 Fifth Avenue, New York 11, N. Y. (5th edition, 1953) $6.25.

This is a thoroughly revised edition of the well-known "Wisconsin text." The purpose of the book, as expressed in the preface to the first edition published in 1924, is to present the subject of botany as a unit and the present authors have followed the same general plan. The revision includes many improvements including a rewritten section on physiology, new examples, data, and ideas. Throughout, the authors have attempted to keep the text understandable and helpful to college students at the elementary level.

Textbook of Genetics. WILLIAM HOVANITZ. 419 ages, illustrated. The Elsevier Press, Inc., 155 East 82nd Street, New York 28, N. Y. (1953) $5.95.

The author, Dr. William Hovanitz, is Professor of Cytology and Genetics at the University of San Francisco. He has put together in this book a wealth of material on the principles of genetics and heredity which should be of great value to the student and research worker in this field. The contents are up-to-date and the order of material is a logical sequence with a generous amount of space devoted to a discussion of probability.

The Vertebrate Organism. Part I. Comparative Vertebrate Embryology and Anatomy. HOWARD H. HILLEMANN. 122 pages. Oregon State College Cooperative Association, Corvallis, Oregon (1953) $3.00.

This volume has been prepared as a study guide for students interested in the development and morphology of vertebrates from a comparative standpoint. It is actually more than a study guide and can be used effectively as a reference which is both a synopsis and a compendium of pertinent information on the vertebrates, their development, organization, phylogeny and evolution.

Viral and Rickettsial Infections of Man. Edited by THOMAS M. RIVERS. 719 pages, 74 illustrations. J. B. Lippincott Company, East Washington Square, Philadelphia 5, Pa. (2nd edition, 1952) $7.50.

Since the first edition of this large volume appeared four years ago considerable new information has been added to the field of virus and rickettsial research. This second edition includes reports on the major developments of this period. The object of the book is to present an integrated picture of the practical aspects and therapeutic problems. Each unit is written by a contributor of authority, a total of 29, and includes the diagnosis, prognosis and current treatment of choice. New chapters have been added on the recently discovered Coxsackie virus and infections of minor importance, such as viral gastroenteritis, cat-scratch disease and generalized salivary-gland virus infections.

AIBS PLACEMENT SERVICE

It is the intention of the AIBS to arrange again for Placement Service facilities at the annual meetings, to be held this year at the University of Wisconsin, Madison, Wis., September 6-10th. Approximately 500 prospective employers of biologists will be notified that interview services will be available during the meetings.

All biologists, whether NOW registered in the Service or not, who present registration badges in September, will be registered free of charge, for the period of the meetings. The Placement Service will be located in the Wisconsin Memorial Union.

Registration for candidates will begin at 12:00 noon, Sunday, Sept. 6th and continue until Wednesday morning, Sept. 9th. Prospective employers may begin registration at 9:00 a.m. Monday, Sept. 7th. The Placement Service will keep the following hours: Sunday, 12:00 noon to 6:00 p.m.; Monday, 9:00 a.m. to 6:00 p.m.; Tuesday, 9:00 a.m. to 6:00 p.m.; Wednesday, 9:00 a.m. to 3:00 p.m.

The Biological Program of the Atomic Energy Commission

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THE probable impact of atomic energy on society was envisioned by the 79th Congress and recognized in Public Law 585 establishing the United State Atomic Energy Commission. It was recognized in the Act that atomic energy may cause profound changes in our present way of life; and the Act established the policy of utilizing atomic energy for improving public welfare and increasing the standard of living. The Congress directed the Atomic Energy Commission to exercise its powers to insure the continued conduct of research in public and private institutions for the utilization of fissionable and radioactive materials for biological and medical purposes, and for the protection of health during research and production activities.

The biological research activities of the Commission are carried on at the National Laboratories and other installations of the AEC, and, at colleges, universities and private research laboratories. In general, the research which is carried on at the AEC laboratories requires either special facilities and an outlay of funds that few universities could afford or is programmatic and would not ordinarily be undertaken by universities. About 20 per cent of the biological research is carried on at colleges and universities. There are more than 135 research projects in colleges and universities. These projects are quite widely scattered geographically, and they cover a wide range of biological problems.

The solution of many of the applied problems in the biological sciences confronting the AEC is dependent on advances and knowledge of basic nature. In the biological sciences there is no sharp demarcation between basic and applied or programmatic research. The solution of applied problems is usually based on an understanding and application of fundamental laws of nature. Many research projects supported by the AEC in the biological sciences have a high probability of providing information that may be applied to the solution of practical problems and could consequently be classified as programmatic by the sponsoring agency. In many cases the investigator is not aware of these implications and in his own mind he feels that the research he is doing is definitely basic. The point I wish to make here is that over the broad spectrum of biological research there will, at one end, be those projects that most everyone would classify as basic and at the other, projects that would be definitely of a programmatic nature. In between would come the larger area of research which could be classified either as basic or programmatic, depending on the viewpoint and the particular question that is asked.

Under the language of the Act, the Commission is directed to conduct and sponsor research utilizing fissionable and radioactive material for biological and medical purposes and to acquire a full understanding of the biological effects of radiations on plants and animals, including man. Research on the effects of radiation on plants and animals is necessary for the safe industrial use of atomic energy for the operation of nuclear reactors and to cope with circumstances that may follow an atomic explosion. Most of the biological research supported by the AEC involves the use of radioisotopes or the biological effects of radiation. While the AEC is directed to support and engage in biological research, it is not assumed that the use of radioisotopes necessarily justifies support by the AEC. An ever increasing proportion of the research in the biological sciences may be expected to make use of radioisotopes, as they well may prove to be as powerful research tool as has the microscope to the biologist. In the deliberations as to the future course of biological researches, it is pertinent to note that in the dawning era of an atomic age the very substances which provide the scientist with new research tools in the form of radioactive tracers and others also create for him a multiplicity of additional problems to be resolved.

The biological research supported by the AEC at colleges and universities is all unclassified. Even at the National Laboratories and AEC installations much of the research is unclassified. In general, the research supported at colleges and universities supplements the research at the National Laboratories. The support of research at colleges and universities provides a means of taking advantage of the most able scientists in the biological sciences for the solution of problems of concern to the nation for which the AEC is responsible. This is done without depriving the colleges and universities of their most able teachers and investigators. In many cases such support provides an opportunity and funds that enable the faculty member to undertake research that otherwise would not be possible. Research projects frequently provide funds for employing graduate students. This enables a substantial number of young men and women to continue their college training at the graduate level. Usually the work the graduate student does on the project for his remuneration provides an opportunity to learn and acquire new techniques.

While a few of the AEC projects at colleges and universities are for the support of work the universities might not elect to do, about 90 per cent of the funds in biology go to the support of work that is of interest to both the university and to the AEC. The movement of ions in soils and plants is of basic importance to the soil scientists and plant physiologist. They are of direct concern to the AEC in such problems as the disposal of radioactive wastes, the absorption of radioactive fallout material by plants either through the roots or through the leaves. Radiation was used as an important research tool in the field of genetics long before the advent of nuclear reactors or the establishment of the Atomic Energy Commission. Basic information on the mechanism whereby radiations cause mutations and the relative biological effectiveness of different kinds of radiations is essential for the industrial utilization of atomic energy as well as for defense and military purposes. The objectives of the investigator, the university, and the responsibility of the AEC may be achieved through projects of mutual interest. For example, a biological station is now being established at Eniwetok for the use of biologists who may wish to carry on studies in the coral islands of the Marshall Islands

area. Since most of the buildings and supporting facilities are already available at Eniwetok, the biological station will involve only nominal additional funds. Biologists going to the station will carry on their own research of the atolls and coral reefs. It is expected that the research they do will provide a background of information on the ecology of the atolls that will serve as a basis for determining the effects of the atomic tests on the fauna and flora of the weapons test site and the accumulation of radioactivity in marine plants and animals.

The university and the individual faculty member are free to seek support from private or public sources. The latter include state or Federal funds. Normally, the university looks to those agencies, either private or public, which it feels the proposed research will be of most interest. It is a sound philosophy to make funds available for research only where the investigator has compentency and a desire to carry on research in the field for which support is being sought. To provide funds for research on any other basis is not likely to yield good returns or prove to be a wise investment. Research is not a commodity that can be purchased on the open market such as can be done for tangible goods. The research program of the AEC in the biological sciences is in a sense an investment. Other projects may be of long duration and information of a practical nature may not accrue for years, but at the same time they may eventuate in major advances in knowledge.

Universities should in normal times avoid taking on research projects that are not appropriate to their program. This would seem to be a sound policy irrespective of the source of funds. The university must chart its own course and objectives. The report of the Commission on Financing Higher Education emphasizes the fact that the Federal Government does not or should not control academic research, but that the nation has vastly benefited from the strengthening of basic science made possible by Federal aid.

Suggestions may occasionally be made to the project leader so as to apprise him of work in the progress or of problems of specific interest to the AEC that are closely allied to his project. The investigator is, however, entirely free to design and plan his research according to his best judgment. This does not imply that the AEC ceases to have an interest or responsibility for the work once the project has been approved. The progress of the research is followed closely by the AEC through reports, visits with the scientific personnel and conferences. This insures an integrated program of research and avoids undue overlapping or duplication of funds and efforts.

The Division of Biology and Medicine of the AEC has an Advisory Committee of eminent scientists from universities and foundations composed of Dr. Alan Gregg, Director for Medical Sciences and Vice President, Rockefeller Foundations; Dr. Edward A. Doisy, Director, Department of Physiology and Biochemistry, St. Louis University School of Medicine; Dr. Gioacchino Failla, Head, Department of Radiology, Columbia University; Dr. E. C. Stakman, Chief, Division of Plant Pathology and Botany, University of Minnesota; Dr. Curt Stern, Professor of Zoology, University of California; Dr. Shields Warren, Pathologist, New England Deaconess Hospital; and Dr. J. T. Wearn, Dean, School of Medicine, Western Range University.

The Committee visits the AEC laboratories and reviews the programs in biology and medicine, and also reviews the individual projects supported at colleges and universities. The Committee is responsible for guiding the program and formulating policies under which the scientific staff of the Division of Biology and Medicine functions. It is essential to maintain a proper balance of effort and integration between the research at the AEC laboratories and that supported at colleges and universities. To achieve this requires considerable time and effort so as to be familiar with the overall program of biological research.

While the Office of Naval Research and the National Institutes of Health of the U. S. Public Health Service make use of panels of scientists to evaluate and select research proposals, the AEC has developed a somewhat different method of accomplishing essentially the same objective. New research proposals are not necessarily considered formally by the Advisory Committee as a body, but they are normally reviewed individually by one or more members of the Committee or by authorities in the field outside of the AEC. Proposals are then acted on by a research committee consisting of the scientific staff of the Division with occasional invited specialists. The action taken by the staff is reviewed by the Advisory Committee at its regular meetings. This policy of utilizing members of the Committee and scientists who are outstanding in the field combined with judgments of the staff provides for a critical and reasonably rapid evaluation of each research proposal and renewal request. Concurrently, it insures a balanced and integrated program between the AEC laboratories and the work supported at universities and colleges. This allows considerable flexibility in that research proposals can be submitted, considered, approved, and the work initiated at any time of the year.

There are probably few research projects in the biological sciences worthy of support that can be completed within a period of one year. Nevertheless, definitive results may accrue and contributions be made in this period, but concurrently new lines of work and problems probably develop. Since appropriations are made annually, projects are usually funded for a period of one year though occasionally funds may be provided covering a longer period. When projects are initially approved, it is the policy to indicate that while the funding is for one year, it is the intention to support the project for a specific period of say three, four or five years depending on the merits and nature of the work. This support is contingent on the availability of funds and satisfactory progress of the work. The assurance of funds under these circumstances and for the period indicated are about as definite as is the case with most state supported institutions where appropriations are made either annually or for a two-year period. Normally before the end of the period for which support was originally indicated, the investigator is advised several months or a year in advance of pending termination of the project.

On all unclassified projects at colleges and universities the investigator is free to publish his results in accordance with institutional policy. He is asked to send to the AEC a copy of manuscripts submitted for publication. This is usually a convenient means of the investigator keeping the sponsoring agency apprised of the progress of the work. In fact, where no classified information is involved, we refrain from expressing any opinion regarding the merits of manuscripts intended for publication in scientific journals as we feel that evaluation can be more appropriately made by editorial boards.

The Division of Biology and Medicine of the AEC maintains close liaison with other Federal agencies supporting research in the biological sciences as well as with the National Research Council. Among these are the Division of Research Grants of the U. S. Public Health Service, Office of Naval Research, National Science Foundation, Office of the Surgeon General of both the Army and the Air Force, and the Agricultural Research Administration of the Department of Agriculture. The Medical Sciences Information Exchange operated by the National Research Council is supported by six Federal agencies including the AEC. As the name indicates, the Center is for the exchange of information on research projects in the fields of medicine and biology. The Center is frequently used by investigators in Federal laboratories and in colleges and universities to obtain lists of project titles on a specific subject and names of the project leaders. This frequently saves considerable time, effort and duplication in that scientists can find out what work is in progress on research that they may be planning. The Center provides a quick source of information to all participating agencies on research projects in progress and pending. This together with the close liaison with

other agencies insures against duplication of effort and of funds. Projects received by the Division of Biology and Medicine that may be of more interest to another agency than to the AEC are referred to the appropriate agency. This is usually done by contacting the other agency and ascertaining its possible interest, and then transmitting this information to the investigator so that he can submit the project to the agency that it is more appropriate for. In a few cases where projects are of definite interest to another agency as well as to the AEC, the project may be supported jointly.

With the establishment of the National Science Foundation the Commission has gradually withdrawn from the predoctoral and postdoctoral fellowship programs in the biological and physical sciences with the recognition that the Foundation is the more appropriate agency to handle this activity. The Foundation has a golden opportunity to contribute to the future course of the nation's science in providing the perspective that only the long-range and the over-all view allows. In the words of Clifford Grobstein (*Bul. Atomic Scientists* 9:39, 1953) "The Foundation's unique responsibility is strategic rather than tactical, in the broad field of policy rather than in operations." If the Foundation achieves this objective and provides some support for basic research in fields not now adequately supported its contribution will far outweigh its direct dollar contributions to research.

Even with the combined financial assistance of the various Federal agencies, the level of support of higher education and research in the biological sciences is hardly likely to be excessive. The field is so broad and the need for more knowledge so great, that all foreseen support will be effectively utilized and much more required before the maximum scientific potential of the country is attained and biological research efforts have reached the point of diminishing returns.

Biologists and Conservation of Natural Resources

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DOES conservation, as a career, challenge individuals whose ability is of sufficiently high order to give them a fair choice of occupations? Can it use recruits with biological talents and interests? Just what kind of problems does it present for solution?

Certainly biologists, as a group, understand the necessity for an effective equilibrium between populations and the finite resources which sustain them. And biologists rather frequently express disappointment that—except for specialized problems in medicine and agriculture—their counsel has not been sought oftener in the determination of high policy—notably in many large projects involving natural resources.

In fairness, however, it must be admitted that neither the two great pioneer studies on American conservation, nor the first formal textbook on that subject were the work of biologists. I refer to *The Earth As Modified By Human Action* (George P. Marsh 1874), *Lands of the Arid Region* (Maj. William Powell 1879) and *The Conservation of Natural Resources* (Charles W. van Hise 1910), the author in each instance being a geologist. Among recent books, two of the most profound analyses of the problem are by economists, and one of the best texts by a team of geographers.

One complication, certainly, has been the understandable difficulty of fitting ecology into the standard biological curriculum. The impression still exists that it does not quite measure up as a respectable intellectual field, or if it does, it is so difficult that the student must be spared contact with it until his work is well advanced. Where a different view has prevailed, as at Ohio State under Dr. Transeau, the beneficial effects can be observed in such fields as entomology, forestry, agronomy, and wild-life, among the men whom he has influenced. Again, the remarkable influence on forest research of the small and short-lived department of forestry at Nebraska was due, not only to the sound training in fundamental science there, but to the early and consistent support by the late Dr. Charles E. Bessey of active ecological work.

However, the steady drain into medicine of able young men interested in biology, and the challenge to vigorous minds of such rapidly developing experimental fields as genetics, biochemistry, and microbiology, coupled with the feeling that conservation represents a rather vague and superficial field of applied biology, has probably served to prevent young men of exceptional capacity from giving their major attention to the field of natural resources.

In view of these circumstances, it seems in order to examine somewhat closely the problem of conservation, divesting it so far as possible from some of its fuzzier connotations.

As nearly as I can determine, three components enter into the conservation of natural resources. These are (1) the resources themselves (2) the population sustained by them and (3) the culture pattern of that population—a complex function of (1) and (2). This appears to be substantially the analysis arrived at independently by Erich Zimmerman in *World Resources and Industry* and by Ciriacy-Wantrup in his excellent *Resource Conservation, Economics and Policies*. Both authors employ the phraseology of economics and sociology, but I find it convenient to borrow a form of expression from mathematics—R/P (f) C, expressing the ratio between resources and population as a function of culture. The first two can be expressed quantitatively. Culture, of course, cannot, although many of its elements can be identified and measured as they affect, for example, vital statistics and selective pressure upon resources.

Granting these assumptions, whatever they may be worth, we arrive at various conclusions which fit well enough with

practical experience. Several instances will serve to exemplify this and at the same time make clear to the young biologist the range of interests, talents, and special preparation which can be useful in conservation problems.

First and foremost, fundamental research dealing with any of the three components listed is important, particularly so if the emphasis is upon *process*. The concern of the biologist with renewable resources and population study should be clear enough. The need for competent students of these problems throughout the world is very great. The Committee on Use and Care of Natural Resources of the National Research Council has had called to its attention repeatedly the urgency of better knowledge of tropics, ocean, and grasslands, as well as of population dynamics.

The study of culture is primarily the business of the anthropologist, sociology being perhaps more concerned at present with social institutions and maladjustments. One might say, without being wholly unfair, that the anthropologist is the physiologist while his colleagues in sociology is the diagnostician of society. In any event, anthropology without biology would be like physics without mathematics, or chemistry without physics. Two of our problems in the Yale Conservation Program—land-use among the Amish and among the Papagos—have resolved themselves into studies of the culture of the groups concerned. Here certainly is a challenge to the young biologist whose interests range beyond the laboratory.

Another conclusion which follows from our analysis of the nature of conservation, and which fits with empirical experience is this: the working conservationist must deal with any resource in context, never as an isolated thing. This is one of the most significant developments of the past two decades, reflected in many ways. The early conservationists were out to save trees, or fish, or game, or soil, or water. The days of the fish hatchery and game farm are numbered, and it is conceivable that the forest nursery may one day join them in limbo.

The modern fish management expert now finds himself concerned with general problems of land-use which affect the spawning and feeding conditions of fish, confident that gonads and stomachs can take care of themselves if given the chance. He is interested in water quality and supply, and thus inevitably in forestry, farm management, and the problem of urban wastes, sanitary and industrial. There is under way a similar broadening of emphasis in the field of wild-life management. Even the forester is becoming more and more a resource-manager, rather than simply a custodian of trees.

The conservation of soil and water must be viewed increasingly through the eyes of the biologist, supplementing those of the engineer. It is, unfortunately, still possible to find books on hydrology which do not mention vegetation, but the situation is changing. In 1947 I wrote a brief article, *The Importance of Ecology in the Training of Engineers*, and was heartened, as well as surprised by the response—not from biologists, but from engineers. M.I.T. now makes it possible for all civil engineering students to understand the importance of biological hazards in their profession. On the other hand, biologists could do with a more sympathetic understanding of the problems of the engineer, which involve an appreciation of the exact sciences. It is unfortunate that so many young biologists have developed an emotional block against mathematics. That this is quite unnecessary has been shown by the success of Professor Griffin of Reed College in teaching mathematics to a group which had been rated as of low aptitude. Incidentally his book *An Introduction to Mathematical Analysis* can be recommended as excellent for review and self-advancement. Dr. Dahl tells me that it is so used by biology students in Norway.

A third conclusion from our analysis has already been foreshadowed. The conservationist must not only understand, but deal with, human behavior. This, in fact, is the term in our expression R/P (f) C, symbolized by C, through which the two others must be approached as a matter of operation. The conservationist must, at every turn, utilize the pattern of the prevailing culture, and particularly so if he wishes to modify it.

It is essentially through the patterns of culture that human ecological relationships are established and maintained. The character of the particular culture determines what resources are used and how they are treated. An Army officer told me that the people of Vienna, sadly in need of fuel, were given permission by the occupying authorities to cut the trees in an old community forest, but refused to do it. Such an action would have violated their established values. By contrast, the impact of Spanish culture in Mexico was ruinous to the Aztec forests, for the Spaniards were graziers, and moreover, so the record goes, went out of their way to remove trees so the landscape would more nearly resemble their homeland—long since denuded of its forests.

In authoritarian lands, cultural changes are introduced by edict—in democratic lands by common consent, or a meeting of minds. There are limits of elasticity in both cases, for any culture has its own inertia. With our strong tradition of private enterprise, conservation is powerfully reenforced when it can be shown to be economically advantageous. Industry can readily be persuaded to abate stream pollution if it clearly involves the loss of valuable by-products. The farmer will stop grazing his woodlot if he is shown that he can, with a small investment, increase the carrying capacity of his pastures and discovers the saving in producing his own lumber. He increases his grass-legume acreage when he learns the importance of fixed nitrogen and the value of grass ensilage.

There happens to be also a strong vein of idealism in American culture, and it is not beyond appeal. In Wayne County, Tennessee, the official of a lumber company became imbued with the importance of having good timber for the next generation. This company had extensive holdings of inferior trees, badly in need of stand improvement. The official in question busied himself to find uses for cull stock, thus reversing the negative genetic selection which has been going on in America ever since we—in contrast to the Europeans—began cutting only the prime timber. Thus far, the experiment has proved sound, and is paying its way. It is, of course, always a comfort to have one's ideals reenforced by good economics! The Pratt and Whitney Company at Hartford, Connecticut, although supplied with good water for its foreseeable needs, has invested heavily in waste-disposal equipment as a matter of good citizenship.

Scientists, faced as they are with the necessity of cautious, logical, impersonal gathering of evidence, are likely to overlook one of their most valuable assets, or to discount it. I speak of intuition, the product of long experience with certain types of material or phenomena. That intuition must always be recognized for what it is, and subjected to the most rigorous testing, goes without saying. Granted the importance of understanding any culture in which conservation problems have arisen, the individual with a biological background, accustomed to the complex equilibria which characterizes living systems, is likely to have a considerable advantage in sizing up the situation and putting his finger on the effective factors. It is not enough to be imbued with high purpose, or to be right. One must know what makes the wheels go around if he wishes to get at the controls.

More than this, the profession of conservation calls for another quality of the trained scientist, although it is no monopoly of his—rigorous intellectual honesty. Incalculable damage can be done by statements that are merely plausible, and not sustained by evidence. With billions now being spent in the shadowy fields of flood-prevention and reclamation, one of our most urgent needs is simply—"the truth, the whole truth, and nothing but the truth." Admittedly this is a large order, but the American people deserve something more than *ex parte* evidence of what the consequences of their generous

appropriations are likely to be in terms of the national welfare. Again, wildlife management, on which vast sums are being used, would be greatly clarified if we had sufficient evidence so that we could tell the farmer honestly whether it is to his economic advantage to provide conditions suitable for game. We still do not know, despite such excellent studies as those of Charles Dambach on fence-row ecology, although we suspect that the answer is "yes."

Enough has been said, I trust, to show that biology is integral to good conservation, and to indicate that the field of conservation is an extremely varied and challenging one. This raises the very practical question as to the demand for conservationists. Obviously those with special technical skills such as forestry, wildlife, soil and watershed management can employ them directly in vocational work. Even in the most crowded activities good men and women are scarce, and always will be.

From the standpoint of effectiveness, however, one should not overlook the increasing opportunities to advance conservation which are coming to those who choose the more routine paths of employment in economic life—business, industry, finance, the professions, and of course, teaching. Country banks are beginning to realize the significance to them and their clientele of sound conservation measures, and to make room for men who can cooperate and advise with farmers. A good farm plan is an excellent guarantee of sound credit risk.

Large corporations, more than ever before, are concerned with the long future and a stable economy. Conservation is essential to both, and increasingly also to good public relations. Such corporations have shown themselves willing to take on men, personable and literate, to be sure, who have a broad understanding of conservation. I have had several opportunities to observe the work of committees set up by industry on forestry, soil conservation, and water, and have been greatly impressed by the high caliber and constructive work of the young representatives present.

We have, in the Conservation Program at Yale, kept the schedule of requirements for admission and graduation intentionally flexible because of the breadth of training and variety of opportunities that exist. Ecology is at the core and from it we branch out into the natural and social sciences, receiving splendid cooperation from such schools as engineering, law, and forestry as well.

The normal course requires two years for a Master's degree, with the intervening summer devoted to some practical field problem. In addition, provision is being made for a single year course for young executives and technical workers in suitable fields, given leave from their regular employment. Only a limited number of students can be taken care of, but to judge by the correspondence which comes in, it will not be long before excellent work of a similar sort will be available at institutions in many parts of the country, as it is now in the Department of Natural Resources at Michigan, under Dr. Cain.

It may seem like a wry finish to say that my most profound hope is to work myself out of a job, thoroughly as I enjoy it. This I think should be the ideal of every special teacher of conservation, excepting, of course, those who teach necessary techniques. More and more I am discovering that the conflicts of interest which create conservation problems have an important source in the failure of the average—and even the exceptional—citizen to understand that the great principles of science apply to the landscape and to ourselves as truly as they do to simple chemical reactions or, say, airplane design. I am looking to a new generation of science teachers, and biologists especially, to do much to remedy this situation.

Contributions from the Captive Audience.

VII. Some Old and Hitherto Fully Described Diseases of Science Meetings.

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THE above title is admittedly a rather poor one, satisfying none, I think, of the criteria set forth by O. A. Stevens some years ago ("Better Titles, More Effective Publications." *Science* 104: 179 (1946)). It is used largely because it incorporates several elements I have long wanted to use in a title without thus far finding an excuse to do so.

Consider the first portion of the title. I have often, when browsing through the scientific literature, been intrigued by those titles which indicate that they are the Vth, XIth or even the XVIIIth in a series by the same author. This implies a sweep of research which quite puts my poor efforts to shame, and suggests that the author has done such a vast amount of work as actually to despair of thinking up new titles. It is a situation similar to that which has developed in connection with the naming of our wars. We have had World War I and World War II, and now talk of World War III! With wars coming so thick and fast it seems no longer feasible to search for such fine phrases as "King Phillip's War," "War of Roses," "Hundred Years' War" and the like.

Just to make certain that there is no chicanery afoot, I intend some time to see if all the Roman numerals in one of those "Notes on . . ." or "Studies on . . ." series can actually be accounted for. But since there is no rule requiring a man either to keep his series in the same journal or suffer the penalty of commencing his numbering all over again, it might be quite a task. For myself, frankly, I see no point in starting with Roman numeral I, and thus postpone for so long getting to the more impressive numbers. It would serve as well to begin, as I have here, with a fairly high figure, but not one so high as to be immediately suspect. Besides, should some critic take issue, I rather think I could find at least enough papers on the same general subject (by other writers, it is true) to fill the gap.

Consider now the second part of my title. Again, I have always been envious of the "New and Noteworthy . . ." or "Hitherto Undescribed . . ." type of title but after certain desultory efforts have despaired of discovering anything which is either new, noteworthy, or hitherto undescribed. The present title has at least the virtue of timelessness.

In considering the pathology of science meetings, at least meetings of workers in the life sciences, it will be necessary to examine a number of aspects which contribute to the final syndrome.

Why do people go?

Why do biologists attend, and in large numbers, the many national and international science conventions? I rather think that the great majority go for one, or more, of the following reasons: to make and renew professional acquaintances: to present and listen to technical papers; and to hire or be hired. These operations are not, of course, mutually exclusive, but they are distinct aspects of the problem. The third factor, to hire or be hired, is very likely the least significant. Seldom does the scientific meeting represent more than the culmination of a hiring system pretty well entrenched in our existing mores, a system involving luck, personal contact, formal scientific accomplishment and, thank Heaven, a large element of innate capacity. The scientific meeting may be the first time prospector and prospectee meet face to face, but the real work has been accomplished by letter, by recommendation, and by grapevine well prior to that time.

The matter of papers is more serious. Ostensibly the main purpose of the scientific meetings is, as was said of the Athenians assembled on Mars Hill, "Either to tell or hear some new thing." The total number of papers, one of the few facts that seems always to be reflected with some accuracy in the local press, is truly impressive. As newscaster Murrow says, I should like to return to that point later. Suffice it to say here that the presentation, or audition, of scientific papers represents a major activity of the convention. It should be facilitated in every possible way by those hard-working souls, the Local Committee on Arrangements, whose only reward will continue to be the post-fruitcup round of applause at the annual banquet.

To many the renewal of acquaintances and the making of new ones is the most important and most enjoyable features of the meetings. Some scientists owe the greater part of their professional and scientific advancement to the diligent exploitation of this phase. Whether the individual works toward his goal in the meeting rooms, or in the adjoining hallways (the hallways seem, unfortunately, *always* to adjoin and usually to be separated by only the flimsiest of partitions!), will depend very greatly upon the nature of the persons concerned.

Where should the meetings be held?

Only recently have we been in a position to decide where our biological science meetings can best be held. By tradition of long standing, the "Christmas" meetings of the AAAS were held in metropolitan areas. As the size of the Association grew a further limitation was imposed by the inability of most cities to contain so large a group, and the choice narrowed to some four or five well-recognized "Convention cities." In 1948 the biologists, representing the backbone of the AAAS, in numbers at least, formed an Institute of their own. This new group, the AIBS, began its September campus meetings at Ohio State in 1950, an experiment which is now firmly established until at least 1957.

Statistically I cannot prove a single thing about the clientele who make up the assemblage at an AIBS meeting. I have the strong impression, however, that there are considerably more young scientists and a much larger proportion of students and teachers than were to be found in the days of the Christmas meetings. If this is true, the reasons for it are readily apparent. In September the bulk of teachers are free from summer school, and not yet embroiled in fall enrollment; the weather is conducive to travel by automobile, often in groups, or with wife and children; the availability of dormitory space and college dining facilities materially reduces the burden of living expense. The students and younger scientists can now more nearly *afford* to attend, for in all too many cases much of their expense is a non-reimbursed one. Faced with the rather staggering cost of a big-city convention, the inadvisability of travelling in mid-winter by private automobile, and loath to spend the Christmas holidays away from home, increasing numbers of younger men and women will decide *not* to attend the traditional meetings. On this point alone the AIBS deserves very real credit for initiating the September convention.

Why give papers?

This question is really two-fold: (1) Why *are* papers presented? and (2) Why *should* papers be presented? The first question is easy to answer. Papers are given in order that the giver may appear upon the printed program and before the eyes of the audience; they are given in order to fulfill certain requirements having to do with reimbursement for travel; they are given in order to establish priority of discovery; and they are given to impart recently acquired information or to expound recently formulated hypotheses. To my way of thinking the second answer is equally easy. Papers should be given *only* to impart newly discovered facts, or to propound newly formulated hypotheses.

How then can we eliminate, or at least minimize, the amount of unjustifiable material which now clutters our programs? Such is human nature that we shall never be entirely free of the scientific man who looks upon each meeting as an opportunity to "get out a paper" (I never heard of a title or abstract being adjudged unacceptable). A scientist of this type clutters not only the program, but also his classroom, his organization, and his field of research. There is some small comfort in the fact that such a man does at least contribute dues, and does add one unobtrusive soul to the audience for one or two papers prior to his own, occasionally remaining for the one immediately succeeding (it is often difficult to get all the way from the speaker's stand to the door before the next performer begins).

Those papers which are given in order to justify travel reimbursement can be completely eliminated as soon as college and research administrators recognize the inherent value to their staff members of attendance at science conventions. If such attendance will not of itself provide justification for the time and money spent upon it, then it is a rare paper indeed which will do so. A system whereby the parent organization pays a certain percentage of the expense and the individual the remainder, as a sort of pledge of good faith, might be a workable arrangement. Subsidy by the university or research institution should be irrespective of whether the member scientist holds office, holds forth or holds his tongue.

Desire for priority of discovery is a matter which remains in essence one of personal integrity. The spectacle of a headlong race is too familiar to all of us; as is the unhappy lot of the patient researcher who never quite gets around to writing up his work in time, and so loses the recognition due him. In extreme cases, theories which are little better than random notions are rushed into print. Presentation of results at a scientific meeting is, on the other hand, a perfectly legitimate procedure for establishing the discovery and naming of a new organism, a newly extended range for a previously named species, and a number of other essentially non-controversial items. I rather doubt, however, if such information need be imparted as it is now, in a discrete, formal presentation by word of mouth. Surely it ought to be possible, on the basis of printed programs and published abstracts, to dispense with the presentation itself.

Could we not, by taking into account the suggestions just noted, reduce the number of papers given for the sole purpose

of publicizing the giver, and eliminate those given primarily to justify expense accounts and to establish priority of discovery? The remaining nucleus of new fact and hypothesis would enormously enhance our presentation sessions and increase our satisfaction in them.

What form should the program take?

In the main only two general types of programs are available to biological societies. These types might be called, for lack of better terms, the short-paper program and the symposium. The "demonstrator" program, so successfully developed by the genetics groups, is not readily adaptable to most other fields. It would be a bleak prospect indeed to contemplate the abolition of either type of program; time is best spent here in seeing how we might relieve certain chronic maladies with which they are now afflicted.

The spectrum of programs comprising a single convention suffers above all else from informational edema, a sort of scientific gout. There is just too much, a whole lot too much, to be done in the time available. The conventions themselves have been extended as far as they can profitably be taken: each day (and in recent years each night) has too many programs; each program has too many individual components!

Consider first the type of program composed of short papers. Much has been done by hard-working and little-understood program secretaries toward lumping (a stark, but applicable, word) together those papers which bear on related fields. It is an heroic effort and should be supported. Even so, we now have sections A, B, C, D, etc. meeting simultaneously, a situation which is not materially alleviated by the counter-movement toward joint sessions or the practice in better organized meetings of placing scoreboards outside the meeting rooms. These scoreboards are designed to tell one at a glance that he has just missed the paper he wanted to hear whereas the less attractive, albeit more sporting, alternative is to let the seeker enter and learn by observation whether or not he has arrived in time. I believe we must take drastic action if the short-paper program is to survive its present illnesses, and again compete favorably with the symposium and the hallways. We must recognize first of all that much of the information given in the individual contributions is by no means most effectively presented through this medium. The complete failure of so many of our papers to stimulate audience discussion seems to bear out this contention. I submit in full expectation of arousing some disagreement that preponderantly *descriptive* material is not a fit topic for program presentation. In short, unless the material presented is judged *likely* to cause comment, to elicit argument, to stimulate questions and discussion from the audience, it should have a hard time justifying its place on the program. One might apply to his paper the question: "Can the sum and substance of my contribution be acquired by the interested reader from the title and abstract which I have formulated?" If the answer is "Yes" then time is wasted in restating it before the group.

The above may seem an indictment of research which is not controversial, and a denial that facts may be provocative. Nothing of the sort is intended. One can be very certain that colleagues interested in knowing what if any other facts, opinions and guesses the author has will seek him out at the first opportunity (some of the more enthusiastic too frequently insist on exploring the matter, in somewhat reduced voice, during the regular program).

In deploring the absence of questions following the bulk of our papers today, honesty forces me to admit that if there were questions no time whatsoever would be available for them unless we choose to wreck our timetables completely. Should some such criteria as those suggested be applied it is entirely possible that there would be both the stimulus and the time to debate on the floor matters of common interest to a larger number of listeners.

Now to the second, or "symposium" type of program. There seems to be a very decided swing toward the symposium at the annual meetings, just as there is an ever-growing number of review journals in the field of science publication. Both trends manifest a growing realization on the part of scientists in general that the total fund of accumulated knowledge is well beyond the grasp of any one individual, and that the pressure towards narrower and narrower specialization must be offset by continuing efforts to review, summarize and evaluate the separate contributions in a given field. Such reviews, summaries and evaluations are far more difficult and potentially far more valuable, than is widely recognized.

In the evolution of the symposium program there have been several detectable phases. For a time they were confined to a few afternoon sessions, held purposely when there were few if any sectional meetings. Then the notion of evening symposia was adopted, and a material increase in their number ensued. The schedule of the Cornell meetings of the AIBS fairly bristled with symposia both day and night, and the AAAS Christmas convention for several years has leaned heavily toward this form of presentation.

Personally I feel that the symposium, more nearly than the short-paper meeting, meets the needs of our annual conferences. But there are many pitfalls and most of our symposia fall into them. In the so-called "Teaching Section" of several societies, for example, we have rather gotten into the habit of having a symposium or two each year come what may. The approach seems to have been: "We are going to have a symposium, now what can we have one about?" It should be: "Here is a problem in the teaching of botany (or biology, or plant pathology, or whatever), can it best be treated by a symposium approach?"

Granted, at least for purposes of argument, that the symposium is a desirable and increasingly popular adjunct to the annual science convention, what precautions should be taken to guard its integrity? First and foremost, I think, is to forego a reliance upon "names" to provide the drawing power. Time and again a symposium stands out because of the accumulated years and eminence of the participants, and draws its audience largely because of this fact. Time and again these eminent men are a distinct disappointment. I have no quarrel with scientific eminence, indeed I should like nothing better than to have some of it, but it is no substitute for hard work in the preparation of a contribution to a symposium program. All too frequently the "top" men in the field are too busy to work very much on their papers, and too far from the laboratory to realize that many of their profound conclusions have long since entered into the everyday instruction of the classroom. In many cases it would be well to settle for a little less name and fame, and a little more youthful diligence.

Miscellaneous minor illnesses.

Any discussion of the illnesses which afflict the science conventions should dwell at length upon the matter of presentation techniques. This problem has, however, been repeatedly treated, and in a most stimulating manner, by others. I could not begin to do so well. All the familiar faults have been noted, with constructive suggestions on how best to present information verbally, and to illustrate it graphically. Yet we still see, and will continue to see, lantern slides (often in the wrong order) which are invisible, or at least undecipherable, to two-thirds of the audience, speeches delivered in large part to the beaded screen, ten-minute talks of a half hour duration, inaudible expositions, and all the other dreary symptoms of just plain poor public speaking. About the only desperate remedy might be a strict rule requiring each speaker to have a written-out final paragraph which he must launch at the warning bell, and a requirement that each paper be so organized that it can be presented intelligibly if the accompanying slides are for any reason unsuccessful. Nothing so pains the audience as to sit while slides are reshuffled, lanterns moved, new bulbs inserted, or curtains adjusted. The

moment a speaker realizes that his slides are not readily visible, whether it be his fault or not, he should without comment continue the presentation without them. To suggest that, in all likelihood, the slides do not "show too well" hardly improves the situation.

An illness which seems chronic, and serious, is the matter of beginning on time. The pattern is well defined, led off by the traditional business meeting at a time when only the hardiest, and those unable to sleep well the first night in a strange bed, are likely to attend. Only a minority of the membership can be expected ever to appear (in itself a sorry situation), but at the time of scheduled opening so few are present that the officers must pass considerable time in sundry whispered conferences. Yet much of the policy of the societies is formulated, or at least ratified, in such meetings!

Lateness is a cumulative thing. If meetings can be counted upon to start some time after the appointed hour, the audience can be counted upon to arrive just so much later as experience has taught it will be wise. Only by establishing a firm practice of commencing on time can this evil be eliminated. The interim training period will be very unfair to the first one or two speakers for each session, for they will address essentially empty halls. Possibly some sort of duty roster should be set up to make certain that no individual gets more than his share of the unfavorable spots.

Our meetings suffer also from a difficulty which might be termed audience instability. Far from holding that, once inside, the spectator should be required to remain for the duration of the session, I am inclined nevertheless to believe that an inexcusable amount of going in and out occurs at our gatherings. There are several manifestations of this migratory habit. There is the mass movement following the presentation of a paper by one of our better known members, which must not only have a very devastating effect upon the person unlucky enough to be next on the program, but often works to the disadvantage of the listeners themselves. I doubt if the level of predictability is such that one can profit by flitting about from program to program, lured by the names on the marquee.

By contrast to the mass movement is the attrition resulting from individual departures. These may well be legitimate and, if they occur between presentations (the chairmen should allow for some confusion at this time), are not to be deplored. Only a genuine emergency can justify the discourtesy to speaker and audience of leaving while a talk is in progress. If one has no alternative but to leave during a talk, the only acceptable procedure is to get up and walk directly and with as little commotion as possible to the door. Few scientists are so inconspicuous that they become invisible by so simple a procedure as rising on tiptoe, inclining the head slightly forward, and mincing along. If, as occurred at the Cornell meetings, the individual is so unlucky as to fall prostrate in the aisle, he will have defeated (even bruised) his own ends.

Much of the success of a meeting depends upon the skill, tact and influence of the chairman. This cannot be overemphasized. On the chairman rests the responsibility of seeing that the program moves smoothly. He must on the one hand strive to keep things on schedule, and on the other try to stimulate questions and audience discussion. He must be willing to terminate, emphatically if necessary, an overlong presentation, even at risk of displeasing some better-known scientist. Somehow he must know how to *invite* questions from the floor; it is ineffective simply to state in the usual fatuous phrases that there "must be a lot of questions" and it helps but little to ask one himself. Finally, the chairman must by some God-given sixth sense be able to determine when an audience has reached the point of saturation, then so manage the granting of a recess that the ensuing speakers are not robbed of their listeners (how often such a recess is tantamount to permanent dismissal!)

These are the things a chairman must do; I despair of telling him *how* they can be done. I do know that once a person demonstrates real ability he should somehow be prevailed upon to act frequently in the role. It is a position which must not be regarded as an honor, to be scattered about impartially, but as a chance for service on the part of the tiny, skilled minority who do it really well.

A final word about the "smoker," which has become rather a fixture at the biology conventions. Custom at present dictates that the smoker be held on the night of the last full day of activities. By this time many have departed or, if not departed, are so weary that they remain in quarters. Many of those who do attend have already sought out, by less convenient means, most of their friends and acquaintances, at some earlier time. The resulting evening is pleasant enough but does not, it seems to me, achieve its best purpose. Would it not be wiser to have the smoker on the night preceding the first full day of the affair, when incoming arrivals are for the most part at loose ends, and before they have managed to contact their friends in other ways? Some, it is true, would not yet be in attendance but particularly at the September campus conventions, when so very many arrive by automobile, it seems likely that rather more would be available than now attend the smoker on the final night. Should a change of scheduling such as this result in the establishment of a more truly "get-together" event, it might in addition serve as a convenient time to make appointments for individual interviews and arrangements of a more specialized nature. One might spend less time during the next three days on the lookout for a friend known to be in town but up to that point unencountered. In any event, I think it deserves a try.

Some further reflection on my title and a little additional reading, suggests that I have been overly conservative! It would better have been "Contributions from the Captive Audience CCMLXVII . . . !" for Coulter, writing on a related matter in the *Botanical Gazette* sixty-one years ago, complained that "Botanists are a peaceable folk, so peaceable, we are almost inclined to add, as to be apathetic. They seem so averse to anything that has even the semblance of discussion that they will not even express an opinion lest it lead to controversy." True, he said "botanists" not "biologists" or "scientists" but the meaning is clear. Let's hope there has been *some* improvement since that time.

All members of Member Societies that plan to meet at Madison in September will receive their programs **IN THE MAIL** during August.

ALL others will receive their programs at the registration desk.

We regret to say this but

If you received a program in the mail but forget to bring it to the meetings, **EXTRA COPIES WILL COST $1.00**

Annual Meeting of the American Institute of Biological Sciences—1952-53

T. C. BYERLY

Chairman of the Governing Board

THE annual meeting of the AIBS Governing Board was held at the National Academy of Sciences–National Research Council Building on April 23, 1953 (picture on page 27). The Chairman of the Governing Board, the Executive Director and the Convention Director presented reports. Reports were either heard or read from all AIBS committees and boards. Topics discussed included: AIBS support for the Scientific Manpower Commission, the role of the AIBS in the preparation and maintenance of the Scientific Register, the Placement Service, vocational guidance literature, the status of the "Associate Member," AIBS policy on symposia at annual meetings, the future financial support of the AIBS.

The present membership of AIBS includes seventeen member societies, ten affiliate societies, and nineteen associates. The total membership of the twenty-seven societies now exceeds 30,000. A number of other biological groups are now actively considering AIBS membership in either member or affiliate status.

During the year 1952-53, four organizations were admitted to affiliate membership: the American Association of Anatomists, the American Genetic Association, the Association of Southeastern Biologists, and the Potato Association of America. Seven commercial concerns became associates of AIBS: Associated Seed Growers, Inc., New Haven, Connecticut; Charles Pfizer & Company, Inc., Manufacturing Chemists, Brooklyn, New York; Difco Laboratories, Detroit, Michigan; F. H. Woodruff & Sons, Inc., Seed Growers and Merchants, Toledo, Ohio; General Biological Supply House, Chicago, Illinois; Lilly Research Laboratories, Eli Lilly & Company, Indianapolis, Indiana; Upjohn Company, Kalamazoo, Michigan.

The AIBS Bulletin

In its role as a forum for the discussion of subjects of general interest to biologists, the editorial staff of the *Bulletin* was authorized to invite and publish "informative and, it is hoped, provocative articles on the training of biologists from the elementary level to the specialized professions." It is on that basis that the content of the *Bulletin* has been planned through the October, 1953 number. The series of articles on agencies which support research in the biological sciences has been continued. Eighty-four private bibliography questionnaires have been completed and returned to the AIBS office in response to the request published in the January, 1953 *Bulletin*. Present circulation of the *Bulletin* is 12,059.

Meeting of Biological Societies

Dr. C. J. Hylander, Convention Director, reported that plans are well underway for the meeting to be held on September 6-10, 1953, at the University of Wisconsin. Nineteen societies will meet at Madsion under AIBS auspices.

Placement Service

The first reorganized list of candidates for positions was published in November, 1952. Two hundred and seven names were included. The second list was published in February, 1953, and contained two hundred and forty names. The third list includes two hundred and seventy-one names and will appear in May. Copies of the lists are sent to all associates and subscribers. During the year, complimentary copies were sent to representative heads of biology, botany, and zoology departments as well as to directors of research in industrial and commercial concerns with an invitation to each to become a subscriber.

Bio-Sciences Newsletter

This bimonthly publication, reporting on new developments in the biological sciences in the United States, continues to originate in the AIBS office. It is made available by the Committee on International Scientific Publication of the National Research Council. The newsletter is distributed through the world as a service of the International Information Administration of the United States Department of State. Approximately 1,500,000 copies of each issue are distributed abroad.

Handbook of Biological Data

The first fascicle, entitled "Standard Values in Blood," has appeared in book form, published by the W. B. Saunders Company, and is now in a second printing. Other fascicles in the series which will include "Nutrition and Metabolism," "Growth and Reproduction," "Performances," "Biochemical Composition" and a fascicle containing miscellaneous tables are in preparation.

Advisory Committees to the Office of Naval Research

The Advisory Committee on Physiology met in New Orleans, Louisiana, on September 2, 1952, and in Chicago, Illinois, on April 11, 1953. Over 40 proposals were considered in addition to the review of existing projects. The Advisory Committee on Biochemistry met in Alta, Utah, on November 24, 1952, and in Madison, Wisconsin, on April 4, 1953. The Committee reviewed 37 proposals and almost as many active projects. The Advisory Committee on Biology met in Ithaca, New York, on September 11, 1952, and in Honolulu, T. H., on February 19, 1953. The Committee reviewed 53 proposals in addition to a large number of active projects. Another meeting of this committee will be held in Washington in May. The Advisory Committee on Hydrobiology met in Honolulu, T. H., on February 20, 1953. The committee reviewed the progress which had been made on the "Directory of Hydrobiology Stations and Personnel" and made plans for the completion of that volume and its publication.

Textbook Survey

Under a subcontract with the Survey of Physiological Sciences of the American Physiological Society, a survey of high school and elementary school textbooks in biology, health, and general science was completed by the AIBS staff. A total of four hundred forty-four books appeared on the final list. Information on textbook adoptions was obtained from the forty-eight states and the District of Columbia. From this information, it was possible to prepare a list of the books most widely used in those states which have a system of state adoption. This list contained forty-eight titles, many of them including a series of books under one title. Each of the books

was analyzed and coded according to a code provided by the Office of the Survey of Physiological Sciences. The final report has been completed.

Scientific Manpower Commission

The following organizations are now represented on the Scientific Manpower Commission: American Association for the Advancement of Science; American Chemical Society; American Geological Institute; American Psychological Association; American Institute of Physics; Policy Committee for Mathematics; Federation of American Societies for Experimental Biology; and the American Institute of Biological Sciences. The Commission has been incorporated and its program outlined. F. P. Cullinan and J. S. Nicholas, "nominees" of the AIBS, have been elected to membership on the Commission.

Institute of Animal Resources

This is an outgrowth of a series of conferences sponsored by the Division of Biology and Agriculture of the National Research Council in which the need for an agency to coordinate the work of producers and distributors of laboratory animals used in scientific research and testing and the institutions engaged in such work was recognized. Its objectives have been clearly defined. The AIBS is now the operating agency of the Institute. Dr. O. N. Eaton, formerly of the Bureau of Animal Industry, United States Department of Agriculture, is the Executive Secretary of the Institute.

Scientific Register

In setting up the National Science Foundation, Congress directed that a register for scientific and technical personnel be maintained as a part of a central clearinghouse for information about such personnel. According to present plans, the operation will be on a decentralized basis depending largely upon the cooperation of such groups as the Federation of American Societies for Experimental Biology and the AIBS, representing the field of biology. Details of this program have not been completed.

Vocational Guidance

As a contribution to vocational guidance, leaders in the field of biology have been invited to prepare inspirational "guest editorials" for publication in the *AIBS Bulletin*. These will be printed as "tear sheets" so they can be removed and given to high school and college students who might thus be interested in becoming biologists. Additional reprints will be available through the AIBS office.

Committee Activities

All AIBS committees have been active during the year. The Associates Committee has investigated the possibility of increasing AIBS support by industrial and commercial concerns. It has planned a symposium on "Biology and Industry" for the Wisconsin meeting. The Membership Committee is exploring the possibilities for improving relations between member and affiliate societies and the AIBS. The Publications Committee has been concerned with three major projects: a study of abstracting and indexing of biological literature; the establishment of a business service for biological journals; and sponsoring a symposium on "Improvement in Biological Communication" for the meeting in Madison. The Editorial Board authorized the pattern of content which has been followed in the preparation of the *Bulletin*. The Committee on the *Handbook of Biological Data* has planned the remaining fascicles in the series from which that publication will be compiled.

The financial statement for 1952-53 and the budget for 1953-54 were considered and approved.

Dr. D. B. Anderson, Chairman of the Nominating Committee, made the report for that committee and the following officers were elected: T. C. Byerly, re-elected Chairman; J. C. Walker, Vice-Chairman; Ralph E. Cleland, member of the Executive Committee for a term of three years; Walter N. Hess, member of the Executive Committee for a term of one year. J. S. Nicholas continues as a member of the Executive Committee with two years to serve.

A committee to revise the AIBS Constitution and a committee to study future financial support of the AIBS were authorized.

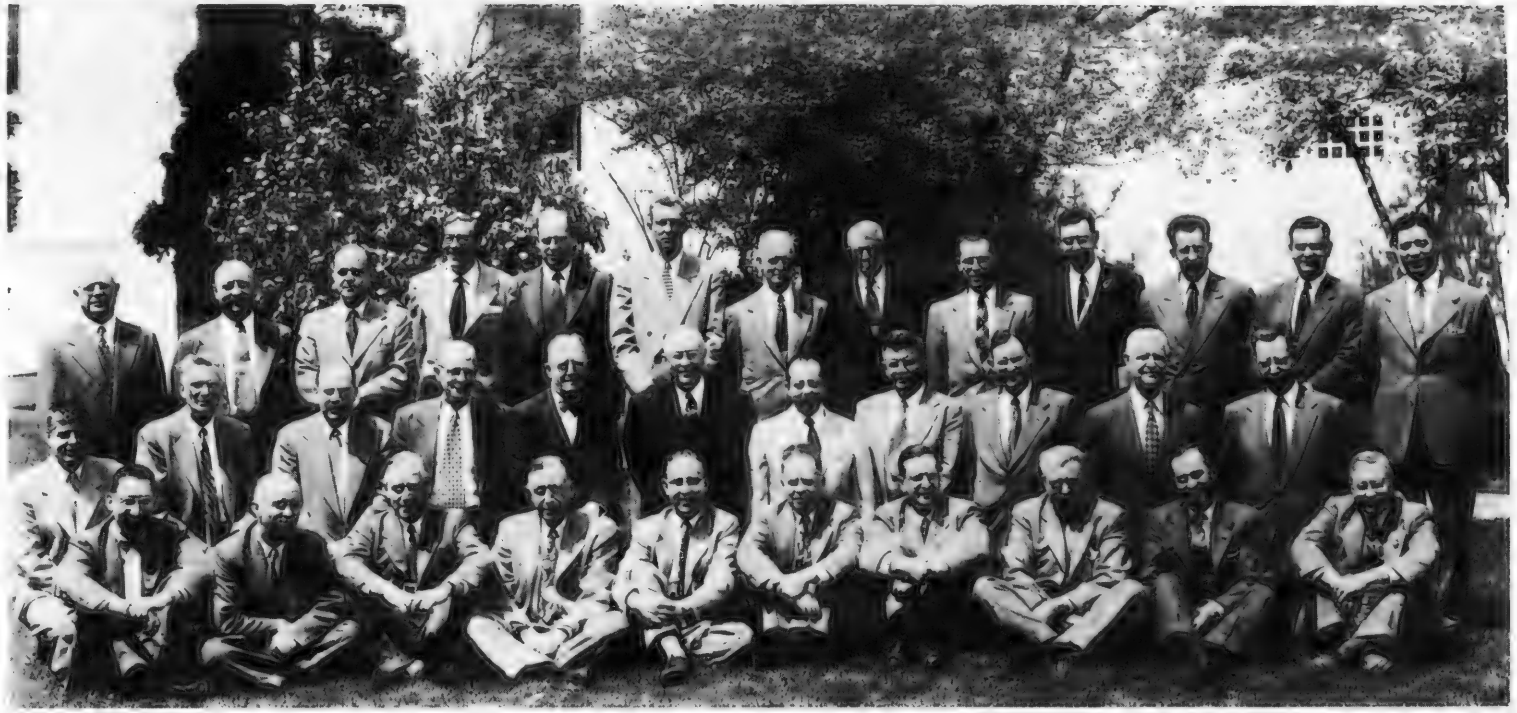
FINANCIAL REPORT 7/1/52 TO 6/30/53

(estimated for last quarter of the year)

Receipts		
Rockefeller Foundation		$12,500.00
Membership Dues:		
Society	$10,762.00	
Affiliate	700.00	
Associate	3,850.00	15,312.00
Bulletin		8,877.60
Business Office Income		459.38
Reprints		205.00
Placement Service		360.00
Convention Income		18,113.50
Total Receipts		$55,767.48
Expenditures		
Salaries		$18,489.46
Office Operation		935.55
Travel		2,569.45
Bulletin		10,454.87
Addressograph Maintenance		1,077.97
Reprints		42.00
Placement Service		365.33
Convention		15,429.98
		$49,364.61
NAS–NRC Overhead (5%)		2,468.23
Total Expenditures		$51,832.84
Balance		$ 3,934.64

AIBS Budget for Fiscal Year 1953-1954

Receipts	
Rockefeller Foundation	$10,000.00
Society Dues	11,200.00
Affiliate Dues	1,000.00
Associate Dues	3,750.00
AIBS Bulletin	9,000.00
AIBS Convention	14,000.00
Miscellaneous	1,000.00
Total Receipts	$49,950.00
Expenditures	
Salaries	$19,500.00
Office Equipment and Supplies	300.00
Office Services and Mail	1,000.00
Travel (Staff and Committees)	2,000.00
AIBS Bulletin	10,000.00
AIBS Convention	13,000.00
Miscellaneous	1,500.00
	$47,300.00
NAS–NRC Overhead (5%)	2,365.00
Total Expenditures	$49,665.00
Balance	$ 285.00



Representatives Attending the AIBS Governing Board Meeting, April 21, 1953.

Left to right. **Row 1:** S. L. MEYER (Exec. Director AIBS and Exec. Secretary, Div. of Biology & Agriculture, NRC), T. C. BYERLY (Poultry Science Association Chairman, AIBS Governing Board), C. J. HYLANDER (Convention Director, AIBS), W. N. HESS (Amer. Soc. of Zoologists), H. E. PAUL (Eaton Laboratories), CLAY G. HUFF (Amer. Soc. of Naturalists), BRONSON PRICE (Amer. Soc. of Human Genetics), F. P. CULLINAN (Amer. Soc. for Horticultural Science), GEO. S. AVERY (Soc. for the Study of Development and Growth), W. A. DAYTON (Ecological Soc. of America).

Row 2: JOHN LYMAN (Amer. Soc. of Limnology & Oceanography), P. M. PATTERSON (Amer. Bryological Society), K. B. RAPER (Nat. Research Council), S. F. BLAKE (Amer. Soc. Plant Taxonomists), R. E. CLELAND (Botanical Soc. of America), H. B. TUKEY (Nat. Research Council), WM. SPECTOR (Handbook Staff), D. B. ANDERSON (Amer. Soc. of Plant Physiologists), BENTLEY GLASS (Genetics Soc. of America), W. W. CORT (Amer. Soc. of Parasitologists), W. M. BENSON (Hoffman-La Roche).

Row 3: J. C. WALKER (Amer. Phytopathological Society), RALPH W. GERARD (Nat. Research Council), PAUL WEISS (Chairman, Div. of Biology & Agriculture, NRC), HENRY CLEPPER (Soc. of American Foresters), DAVID JOHNSON (Amer. Soc. of Mammalogists), J. C. DICKINSON, JR. (Amer. Soc. of Ichthyologists & Herpetologists), JOHN N. COUCH (Mycological Soc. of America), E. C. ALBRITTON (Editor, Handbook of Biological Data), B. L. KROPP (Ass't. Business Manager, NRC), C. J. WESSEL (Soc. for Industrial Microbiology), GEORGE NACE (Div. of Biology & Agriculture, NRC), ORR REYNOLDS (Office of Naval Research), MILTON O. LEE (Exec. Secretary, Federation of Amer. Soc. for Exper. Biology). Not in picture: ROBERT C. COOK (Amer. Genetics Association).

MEETING OF THE BIOLOGICAL SOCIETIES

Sponsored by

AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES

University of Wisconsin

MADISON, WISCONSIN

September 6-10, 1953

INFORMATION ON HOUSING

DORMITORY ACCOMMODATION: University Dormitories will be available for housing. Couples and families will be accommodated in hotels, motels and private homes near the campus.

DORMITORY ROOMS MAY BE OCCUPIED: Any time from noon on Sunday, September 6th until 10 a.m. on Friday, September 11th.

PRE- AND POST-MEETING HOUSING: Arrangements should be made through the Societies planning special forays and excursions.

COST OF ROOM AND MEALS PER PERSON IN DORMITORIES: Sunday evening to Thursday including breakfast: $21.50. Deductions for luncheons and banquets scheduled by Societies will be made. For those occupying dormitories for shorter periods some adjustment will be made.

RESERVATIONS: May be made from July 1st to September 5th. Payments may be made at check-in time in dormitories and by arrangement in off-campus housing.

HOTELS: Reservations may be made at the following Madison hotels: Loraine, Belmont, Park and Edgewater. Rates are $3.50 up. Rates at motels are $5.00 up.

ACKNOWLEDGMENT: Each advance dormitory reservation will be acknowledged by a postcard which should be presented at the registration desk in September. Registration will be in the Wisconsin Memorial Union, Langdon Street.

TO MAKE ADVANCE REGISTRATION: Please fill out the registration form below and mail to:

Otto E. Mueller
Director, University Housing Bureau
434 Sterling Court
Madison 5, Wisconsin.

(PLEASE TYPE OR PRINT ALL INFORMATION)

REGISTRATION AND HOUSING APPLICATION

Name: ..... (surname), ... (first) Male ☐ Female ☐

Home Address: ..... (street) ..... (city) ..... (state)

Title: ..... Institution: .....

Professional Address: .....

Full Names, Sex, Relationship of Members of My Party:

.....

.....

Arrival: By Train ☐ By Plane ☐ By Car ☐

Expected Time of Arrival: ..... (date, hour) Of Departure: ..... (date, hour)

Society Membership:

(1) .....

(2) .....

(3) .....

KNOW YOUR SOCIETIES

AMERICAN SOCIETY OF ZOOLOGISTS

Total membership: 1,290. **Types of membership:** active and associate. **Dues:** determined by the Executive Committee, currently $4.00 per year, $1.00 of which is for the Index for BIOLOGICAL ABSTRACTS. **Officers:** President: E. Newton Harvey; Vice-President: Libbie H. Hyman; Treasurer: Harry A. Charipper; Secretary: S. Meryl Rose, Department of Zoology, Vivarium, University of Illinois, Champaign, Illinois.

The American Society of Zoologists is directly descended from the American Morphological Society, the Zoological Society of America and the Eastern and Central Branches of the American Society of Zoologists. The first meeting of the new Society was held in 1890 at the Massachusetts Institute of Technology. The objectives of the Society are "the association of workers in the field of Zoology for the presentation and discussion of new or important facts and problems in that science and for the adoption of such measures as shall tend to the advancement of zoological investigations in this country."

The conditions of membership in the society are: (a) Associate membership is open to all actively engaged in the field of zoology who have had training in zoology equivalent to that required for the doctor's degree; (b) Active membership is open to those who hold the doctor's degree in zoology or who have done work equivalent thereto, and who, in addition to the usual requirements for this degree, have published the results of substantial zoological research. Election to membership is upon recommendation of the Executive Committee. Nominations for membership may be made by members of the Society. Both active and associate members may present papers before the society without introduction, and receive all literature issued by the society, including the *Proceedings* of the Society.

The Society holds annual meetings for the presentation of scientific papers. Such papers may be presented in person, by title, or by demonstration. The *Proceedings* of the annual meetings are published in the *Anatomical Record*. The time and place of the annual meetings are determined by the Executive Committee. They are customarily held in conjunction with one of the large national science organizations, such as the AAAS or the AIBS. The American Society of Zoologists does not offer, as yet, any placement service or publish pamphlets giving information about requirements in the field of Zoology.

BOTANICAL SOCIETY OF AMERICA

Total membership: 1,870. **Types of membership:** active, family, life, patron, corresponding, retired. **Dues:** $7.50 per year for active members (includes journal); $5.00 per year for graduate students: $150.00 for life members. **Journal:** AMERICAN JOURNAL OF BOTANY. **Officers:** President: Ralph H. Wetmore; Vice-President: Truman G. Yuncker; Treasurer: Harry J. Fuller; Secretary: Harriet B. Creighton, Department of Botany, Wellesley College, Wellesley 81, Mass.

The original Botanical Society was organized by the Botanical Club of the AAAS at Brooklyn, N. Y. in August 1894. There were 25 charter members and they held their first annual meeting in August 1895 at Springfield, Massachusetts. The present Botanical Society was formed by the federation of the original Society, the Society for Plant Morphology and Physiology and the American Mycological Society. This union was accomplished on December 27, 1906 in New York City by the adoption of a constitution and a joint meeting of the three societies involved. In 1938 the Society was incorporated under the laws of the state of Connecticut.

The purposes of the Society include the following: to serve as a clearing house for the botanists of America in respect to all matters of general botanical interests; to support projects of general interest to botanists; to provide an opportunity for the presentation of research studies before a critical and competent audience; to furnish avenues of publication for such studies; and to accept and administer funds for the purposes indicated.

Any person actively interested in botanical work may apply for active membership, if sponsored by three members of the Society by filing an application in writing with the Secretary. Active members who are husband and wife may receive the privilege of family membership which involves the payment of two membership dues minus the allottment for one journal subscription. Any active member in good standing may become a life member by the payment of dues of $150.00. Patrons are any persons making a single payment of $250.00. Patrons may be voted all the privileges of active membership if an open meeting so desires. Corresponding members are chosen from authors of important contributions to the science of botany; this number is limited to forty. All active members of the Society, who have been members without interruption for 30 years are eligible for retired membership upon retirement from professional activities.

Three subject sections exist within the Society; the paleobotanical, physiological and teaching sections; and three regional sections; Central States, Pacific and Southeastern sections. Various committees are appointed from time to time to take up specific problems. One of these at the present time is the Placement Service Committee and another is the Committee on Education.

THE AMERICAN ASSOCIATION OF ANATOMISTS

Total membership: 985. **Types of membership:** active. **Dues:** $5.00 per year for U. S. members; $4.00 for Canadian members; $2.00 for foreign members. **Journals:** ANATOMICAL RECORD and AMERICAN JOURNAL OF ANATOMY. **Officers:** President: Leslie Arey; Vice-presidents: Samuel R. Detwiler and William Bloom; Secretary-Treasurer: Normand L. Hoerr, School of Medicine, Western Reserve University, Cleveland 6, Ohio.

The American Association of Anatomists was founded in 1888. The purpose of the Association is the advancement of anatomical science. A three-day meeting is held in the spring, usually the week before Easter, and is devoted to reports of investigations. Abstracts of papers and demonstrations presented at the meetings are published in the *Anatomical Record*, as are the *Proceedings* of the Association.

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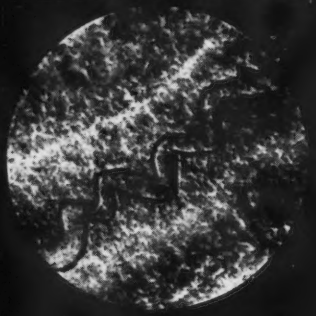

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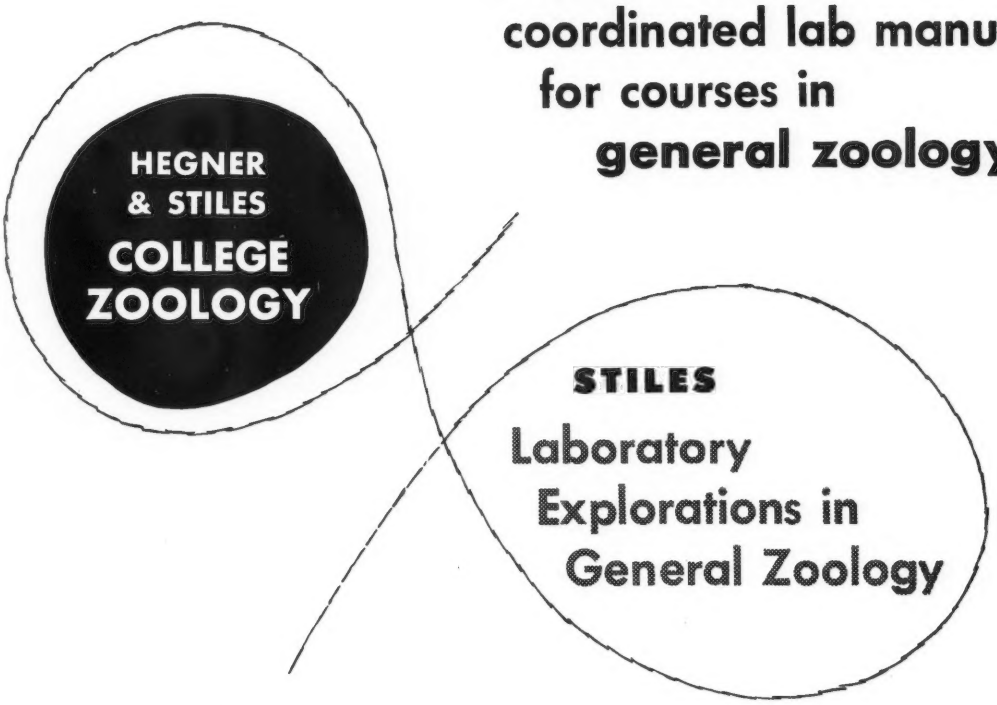

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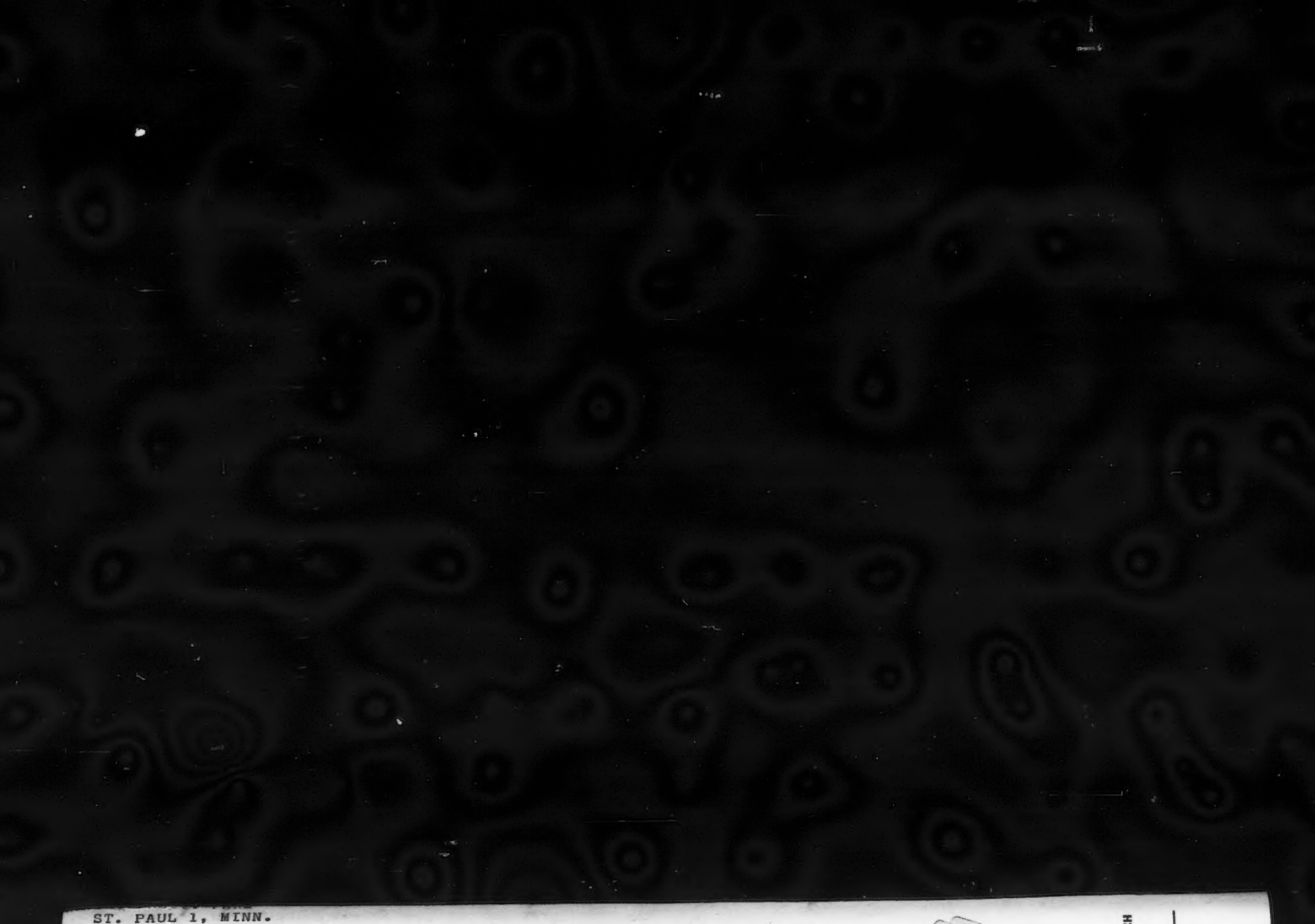
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